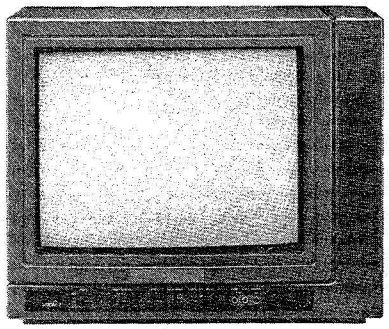
# Colour television

Service
Service
Service

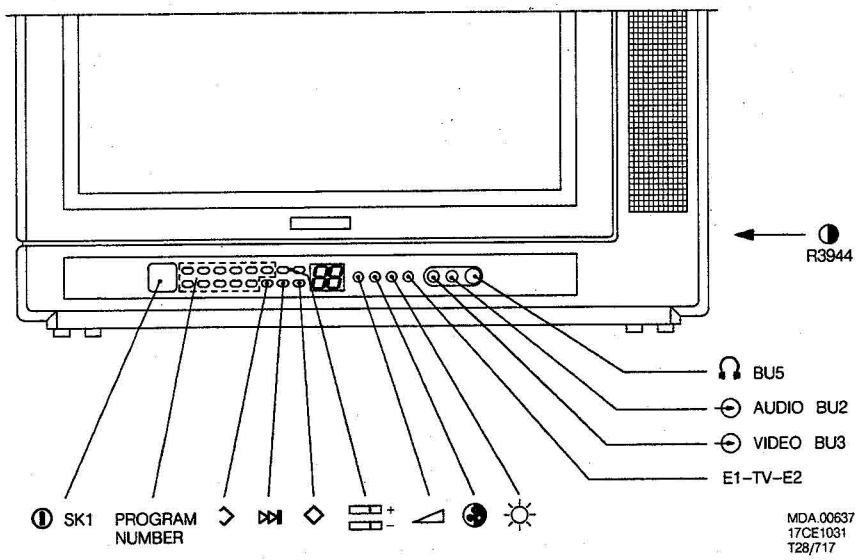


42 163 A12

# Service Manual

## CHASSIS CP90NRC

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.




220-240 V (±10%)
50 W

75Ω coax.

A41EAM01X16

15Ω/2 W
MONO

Full SCART

CVBS

AUDIO

8-1000Ω

axbxc
489x401x394mm

PAL B/G/H

**UV617**

VHFa : 48-105 MHz
VHFb : 112-294 MHz
UHF : 471-855 MHz

Documentation Technique Service Dokumentation Documentazione di Servizio Huolte-Ohje Manual de Servicio Manual de Serviço

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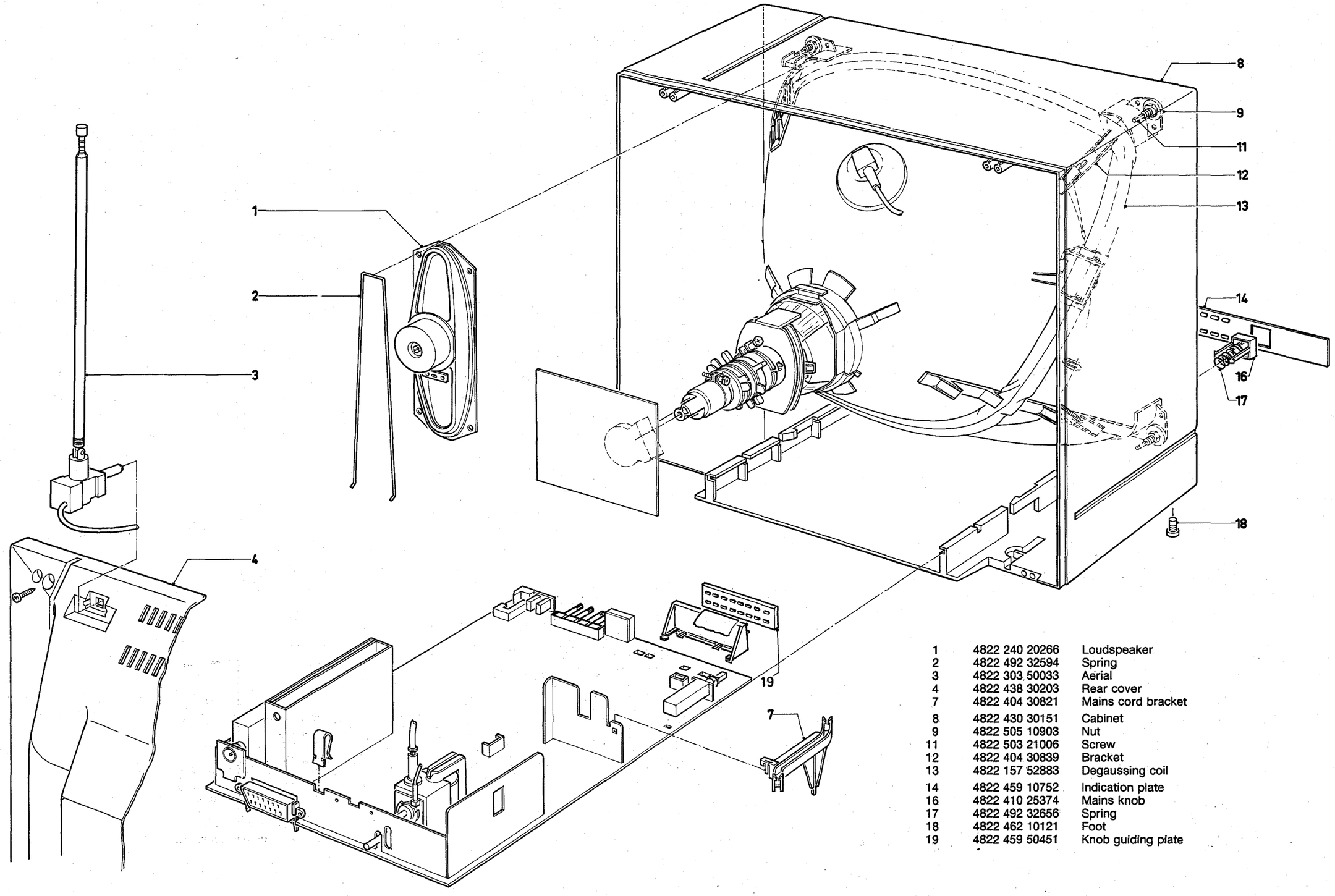


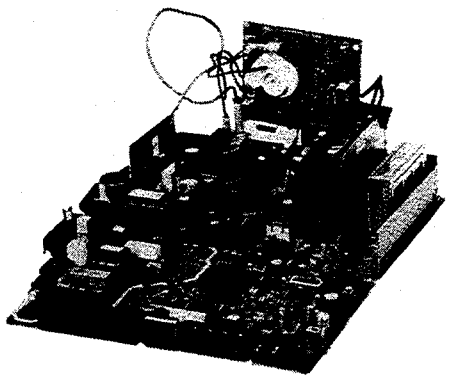

| | | |
|---|---|---|
| 1 | 4822 240 20266 | Loudspeaker |
| 2 | 4822 492 32594 | Spring |
| 3 | 4822 303 50033 | Aerial |
| 4 | 4822 438 30203 | Rear cover |
| 7 | 4822 404 30821 | Mains cord bracket |
| 8 | 4822 430 30151 | Cabinet |
| 9 | 4822 505 10903 | Nut |
| 11 | 4822 503 21006 | Screw |
| 12 | 4822 404 30839 | Bracket |
| 13 | 4822 157 52883 | Degaussing coil |
| 14 | 4822 459 10752 | Indication plate |
| 16 | 4822 410 25374 | Mains knob |
| 17 | 4822 492 32656 | Spring |
| 18 | 4822 462 10121 | Foot |
| 19 | 4822 459 50451 | Knob guiding plate |

42 141 E12

4253

# Colour television Chassis CP90NRC

Service
Service
Service



42 475 A12

# Service Manual

## TECHNICAL DATA

| | |
|---|---|
| Mainsvoltage | : 220-240 V~ (± 10%) |
| Aerial input impedance | : 75 Ω-coax |
| Minimum aerial input VHF | : 30 µV |
| Minimum aerial input UHF | : 40 µV |
| Maximum aerial input | : 180 mV |
| Pull-in range colour sync | : +300 Hz/–300 Hz |
| Pull-in range horizontal sync | : +600 Hz/–600 Hz |
| Pull-in range vertical sync | : +5 Hz/–5 Hz |

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## WARNINGS

1. Components placed within the white frame on the chassis are directly connected to the mains. Thus always connect a set that has to be repaired via an isolating transformer to the mains voltage.
2. Safety regulations demand that the set be restored to its original condition and that components identical to the original types be used. Safety components are marked by the symbol ⚠.
3. In order to preclude damage to ICs and transistors flashover of the EHT should be avoided. To prevent damage to the picture tube, the method indicated in fig. 1 should be followed in case of discharge. Make use of a high- tension probe and a universal meter (mode DC-V). Discharge until the meter reads 0 Volts (after approx. 30 s).
4. **ESD**

   All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
   When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
   Keep components and tools also at this potential.
5. Together with the deflection unit and the possible multipole unit the flat square picture tubes applied form one whole. The deflection and multipole units have been adjusted in an optimum way in the factory. Adjustment of these units during repair is thus not recommended.
6. The EHT cable has been bonded in the line output transformer. It can thus not be replaced.
7. Proceed with care when testing the EHT section and the picture tube.
8. Never replace any modules or other parts while the set is switched on.
9. Wear safety goggles during replacement of the picture tube.
10. Use plastic instead of metal alignment tools. This is in order to preclude short-circuits or to prevent a specific circuit from being rendered unstable.

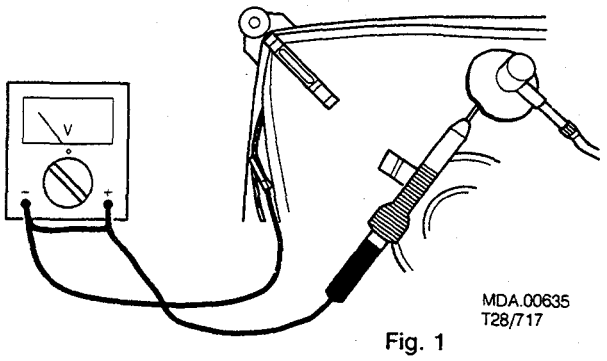



Fig. 1

## REMARKS

1. The direct voltages and waveforms should be measured relative to the nearest earthing point on the p.c. board.
2. The direct voltages should be measured as follows: Do not apply an aerial signal. Adjust receiver for minimum brightness, maximum saturation and contrast.
3. The waveforms should be measured under the following conditions:
   a. Use a colour-bar pattern as input signal (PM5519).
   b. Connect a universal meter (V/DC mode) to pin 6 of IC7260 for sets with SCART or to pin 5 of IC7261 for sets without SCART. Set the saturation control to 3V for sets with SCART or to 2.4V for sets without SCART.
   c. Connect an oscilloscope (0,1V/div.– DC mode) via a 10:1 attenuator to pin 1 of connector M1. Set the brightness control so that the level of the black bar in the video signal is situated at 2.7V. Set the contrast control for a video signal amplitude of 2.4V (see Fig. 2).
4. The CRT board is provided with printed spark gaps. Each spark gap is arranged between an electrode of the CRT and the aquadag coating.
5. In the production alternative semi-conductors may be used. However the semi-conductors specified in the parts list and circuit diagram can always be used as replacements.
6. Connectors used for the modules (board to board) have been gold-plated and must be replaced by the same type only.
7. In case of faultfinding and/or repair on the SECAM/PAL transcoder, the accessibility of the circuit and the components can be increased through the use of extension PCB's.
   The order numbers for these extension PCB's are:
   – 4-pole 4822 395 30262
   – 5-pole 4822 395 30261

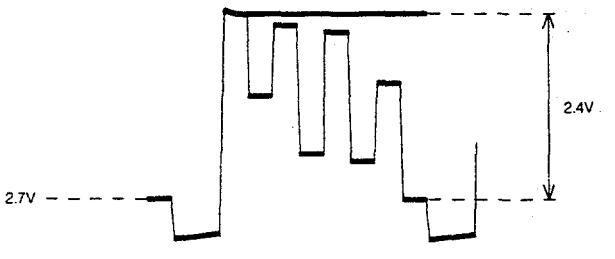



Fig.2

## MECHANICAL INSTRUCTIONS

To facilitate troubleshooting and repair of the set the chassis can be pulled out of the cabinet and placed against the right-hand side of the set.

## ELECTRICAL INSTRUCTIONS

### A. ADJUSTMENTS TO THE MAIN PANEL (Fig. 4)

1. **+95V power supply voltage**

   Connect a voltmeter (DC) between pin 5 of connector M6 and ground. Adjust 3700 for a voltage of 95V.

2. **Picture width**

   The picture width is adjustable with 3598.

3. **Vertical centring**

   This is adjusted with SK20.

4. **Picture height**

   The picture height is adjustable with potentiometer 3580.

5. **Focussing**

   This is adjusted with the focussing potentiometer on the line output transformer (Fig. 3).

6. **Chroma subcarrier oscillator for sets with SCART**

   Apply a colour-bar pattern. Interconnect pins 23 and 24 of IC7260. Connect a 470 Ω resistor between pins 6 and 1 of IC7260. Adjust 2267 so that colour pattern on the screen is practically stationary. Remove the resistor and the interconnection.

7. **Chroma subcarrier oscillator for sets without SCART**

   Apply a colour-bar pattern. Interconnect pins 13 and 14 and pins 1 and 5 of IC7261. Adjust 2267 so that colour pattern on the screen is practically stationary. Remove the resistor and the interconnection.

8. **PAL delay line**

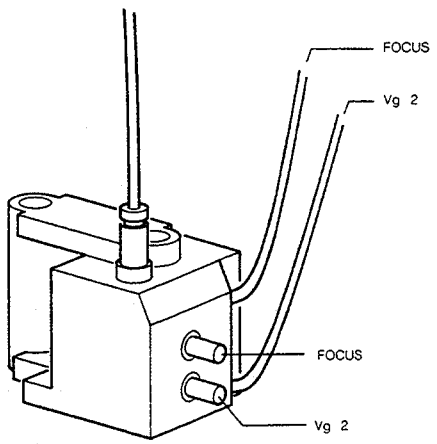
   Apply a generator signal from a PM5519. Set the generator to "DEM". Set contrast and brightness to normal and set the saturation control to 3/4 of its range. Adjust 3274 so that the venetian-blinds effect in the 3rd bar is minimal. Subsequently, adjust 5270 until the venetian-blinds effect in the 1st and the 4th bar is also minimal. Readjust 3274 if necessary.

9. **Chroma trap in the luminance circuit**

   Use a colour-bar pattern and set the receiver controls to their normal settings. Connect an oscilloscope to pin 10 of IC7260 for sets with SCART or to pin 8 of IC7261 for sets without SCART. Adjust 5261 for minimum amplitude of the chrominance signal being visible on the various stages of brightness of the luminance signal.

10. **The keyboard scan frequency**

    Connect a frequency counter to pin 16 of IC7840. Adjust potentiometer 3896 for a frequency of 49 Hz.




MDA.00633
CP90
T28/723

Fig. 3

### B. ADJUSTMENTS TO IF/SYNC UNIT 1040 (Fig. 5)

1. **Horizontal synchronisation**

   Remove the screening cap of IF/SYNC unit 1040. Apply an aerial signal. Interconnect pins 5 and 9 of IC7038. Adjust 3055 until the picture is stationary. Remove the interconnection. Locate the screening cap.

2. **Horizontal centring**

   This is adjusted with potentiometer 3038.

3. **RF-AGC**

   If the picture of a strong local transmitter is reproduced distorted, adjust potentiometer 3092 until the picture is no longer distorted.

### C. ADJUSTMENTS TO THE CRT BOARD (Fig. 6)

1. **Cut-off point of CRT**

   Apply white pattern signal. Interconnect pins 1 and 7 of IC7260 for sets with SCART or pins 1 and 6 of IC7261 for sets without SCART. Adjust brightness and contrast until the DC voltage across 3401 is 0V. Adjust 3412, 3432 and 3452 for a black level of 130 V on the picture tube base. Now turn Vg2 potentiometer (Fig. 3) until the gun that first emits light is just no longer visible. Adjust the two other guns with their associated controls (3412, 3432 or 3452) until just no light will be visible. Remove the interconnection.

2. **Grey scale**

   Apply a grey scale test-pattern signal and set the controls to their normal settings. Allow the set to warm up for about 10 minutes. Adjust 3421 and 3441 until the desired grey-scale is obtained.

## D. ADJUSTMENTS SECAM/PAL TRANSCODER (Fig. 7)

**1. "Circuit cloche"**

Disconnect jumper 9302 at one side.
Apply a signal generator to capacitor 2316.
Adjust the frequency of the signal generator for 4.286 MHz.
Connect an oscilloscope to pin 3 of IC7310.
Adjust 5316 for maximum amplitude. Reconnect jumper 9302.

**2. Subcarrier oscillator**

Apply a 75% SECAM colour bar pattern.
Connect 6-IC7310 by means of a 10 kΩ resistor to ground.
Connect a frequency counter having a high input impedance (via a probe C ≤ 2pF) to pin 26 of IC7260 for sets with SCART or to pin 16 of IC7261 for sets without SCART.
Adjust 2332 for a frequency of 8.867236 MHz.
Remove the resistor.

**3. SECAM demodulator**

Apply a SECAM black frame signal. Connect an oscilloscope to pin 14 of IC7310. Adjust 3347 and 5347 for a minimum modulation.

**4. Delay line**

a. Amplitude
Apply a SECAM red frame signal. Connect an oscilloscope to pin 28 of IC7260 for sets with SCART or to pin 18 of IC7261 for sets without SCART. Adjust 3335 for an equal amplitude of the lines.

b. Phase
Adjust for a normal brightness and contrast. Connect an oscilloscope to pin 16 of IC7260 for sets with SCART or to pin 12 of IC7261 for sets without SCART. Apply a 75% colour bar pattern. Adjust the saturation control for an as flat as possible output voltage. Then apply a 75% SECAM colour bar pattern. Adjust 5337 so that the signal is virtually flat.

---

**INSTALLATION INSTRUCTIONS FOR THE SECAM/PAL TRANSCODER**

Remove jumpers 9259 and 9260 (at connector M1).
Mount connectors 4822 417 50217 and 4822 267 40648, if not present, at positions M8 and M9. Place the SECAM/PAL transcoder on connectors M8 and M9.
Mount bracket 4822 404 30868 as indicated in Fig. 8.
The set is now capable of receiving both PAL and SECAM.

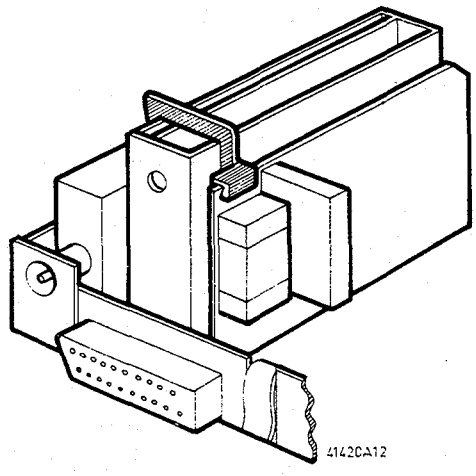



Fig. 8

CARRIER PANEL

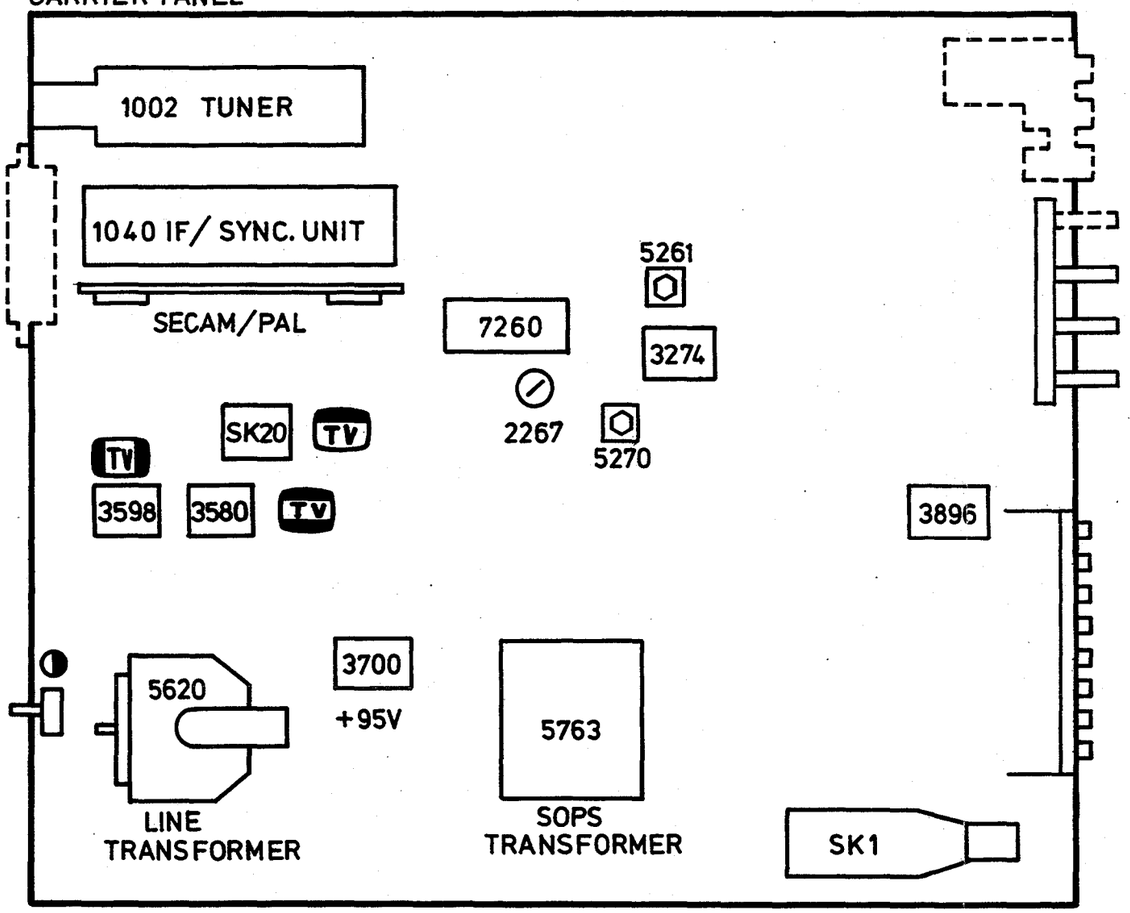



Fig. 4

PICTURE TUBE PANEL

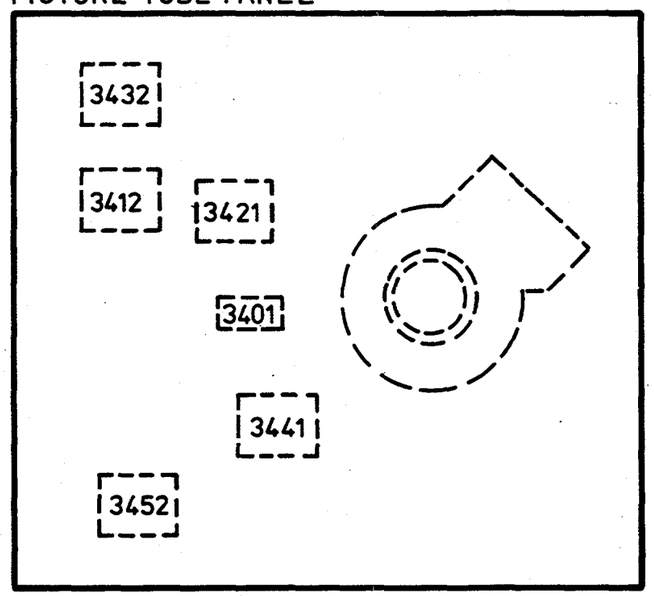



Fig.6

IF/SYNC UNIT

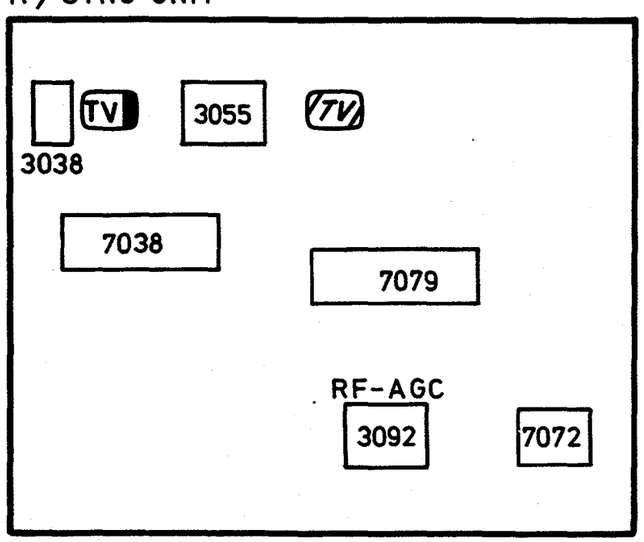



Fig.5

SECAM/PAL TRANSCODER

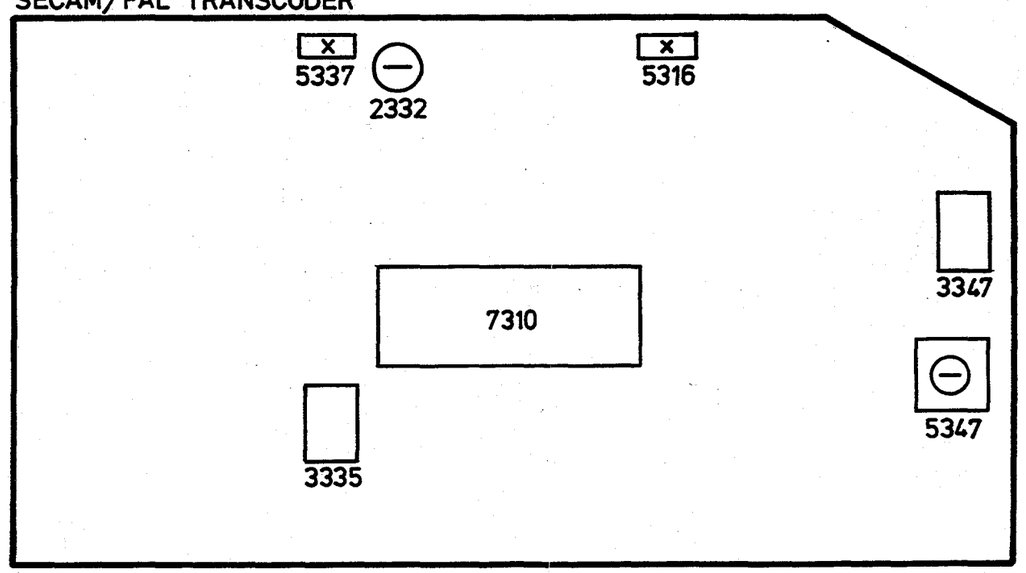



Fig.7

42 041 C12

## CARRIER PANEL

| | | |
|---|---|---|
| CNX62 | 4822 130 90121 | |
| HA11484 | 4822 209 83199 | |
| LM5241RAP | 4822 130 90162 | Display |
| TDA3561A/N7 | 4822 209 71518 | |
| TDA3565/N4 | 4822 209 71742 | |
| TDA8190 | 4822 209 70872 | |

| | | |
|---|---|---|
| BC328 | 4822 130 44104 | |
| BC547 | 4822 130 44257 | |
| BC548 | 4822 130 40938 | |
| BC548B | 4822 130 40937 | |
| BC548C | 4822 130 44196 | |
| BC558 | 4822 130 40941 | |
| BC558B | 4822 130 44197 | |
| BC558C | 5322 130 60068 | |
| BC636 | 4822 130 44283 | |
| BD939F | 4822 130 42681 | |
| BF483 | 4822 130 42607 | |
| BUT11AF | 4822 130 42679 | |
| PH2369 | 4822 130 41594 | |

| | | |
|---|---|---|
| BAV20 | 4822 130 34189 | |
| BAX14 | 4822 130 34193 | |
| BT151-500R | 5322 130 24081 | Thyristor |
| BYD33D | 4822 130 42488 | |
| BYD33G | 4822 130 42489 | |
| BYD33J | 4822 130 42606 | |
| BYD33M | 4822 130 32896 | |
| BYW95B | 4822 130 32058 | |
| BZX79-C2V7 | 4822 130 80022 | |
| BZX79-F6V2 | 4822 130 34167 | |
| BZX79-F11 | 4822 130 34488 | |
| BZX79-F33 | 4822 130 34142 | |
| BZX79-F36 | 4822 130 34368 | |
| ZTK33B | 4822 130 30959 | |
| 1N4148-30 | 4822 130 33941 | |
| 1N4148-75 | 4822 130 33939 | |
| 1N5061 | 4822 130 31933 | |

| | | |
|---|---|---|
| 5108 | 4822 157 52809 | |
| 5259 | 4822 157 51462 | |
| 5261 | 4822 157 52807 | |
| 5270 | 4822 157 52808 | |
| 5271 | 4822 157 53063 | |
| 5600 | 4822 152 20558 | |
| 5608 | 4822 157 52315 | |
| 5611 | 4822 156 21332 | |
| 5620 | 4822 140 10306 | Line transformer |
| 5629 | 4822 146 21116 | Line driver |
| 5638 | 4822 158 10563 | |
| 5653 | 4822 158 10551 | |
| 5654 | 4822 158 10551 | |
| 5655 | 4822 158 30208 | Transformer |
| 5674 | 4822 158 10604 | |
| 5697 | 4822 158 10551 | |
| 5763 | 4822 146 50217 | Sops transformer |
| 5914 | 4822 157 53066 | |

### Various parts

| | | |
|---|---|---|
| 1002 | 4822 210 10266 | UV617 |
| 1002 | 4822 210 50118 | U743 |
| 1040 | 4822 212 22742 | IF/SYNC for sets without SCART connection |
| 1040 | 4822 212 22761 | IF/SYNC UK for sets without SCART connection |
| 1040 | 4822 212 22607 | IF/SYNC for sets with SCART connection |
| 1040 | 4822 212 22688 | IF/SYNC UK for sets with SCART connection |
| 1103 | 4822 121 40543 | filter 5.5MHz |
| 1103 | 4822 242 70279 | filter 6.0MHz |
| 1261 | 4822 242 70626 | crystal 8.86MHz |
| 1262 | 4822 157 51056 | delay line DL330 |
| 1267 | 4822 242 70626 | crystal 8.86MHz |
| 1270 | 4822 320 40096 | delay line DL701 |
| 1901 | 4822 138 10032 | battery 2.5V |
| 1920 | 4822 102 50047 | 3 potm. assy for sets without SCART connection |
| 1920 | 4822 101 40139 | 3 potm. assy + switch for sets with SCART connection |
| | 4822 267 60188 | CVBS/AUDIO/ headphone socket |
| | 4822 267 60172 | SCART socket |
| | 4822 256 30274 | fuse holder |
| | 4822 277 10976 | mains switch |
| | 4822 273 30206 | switch (sk20) |
| | 4822 212 22741 | keyboard |
| | 4822 459 50451 | knob guiding plate |
| | 4822 492 63524 | spring fix. trans. |

| | | |
|---|---|---|
| 1580 | 4822 253 10054 | T160mA |
| 1652 | 4822 253 30025 | T2A |
| 1690 | 4822 253 10064 | T400mA |

| | | | |
|---|---|---|---|
| 3002 | 4822 111 30508 | 10 Ω | 0.33 W |
| 3036 | 4822 111 30499 | 4.7 Ω | 0.33 W |
| 3274 | 4822 100 20148 | 1 kΩ | potm. |
| 3275 | 4822 111 30508 | 10 Ω | 0.33 W |
| 3571 | 4822 116 51091 | 18 kΩ | 2.5 W |
| 3573 | 4822 116 51789 | 22 Ω | 0.5 W |
| 3574 | 4822 116 51789 | 22 Ω | 0.5 W |
| 3580 | 4822 100 10503 | 100 Ω | potm. |
| 3598 | 4822 101 20838 | 4.7 kΩ | potm. |
| 3600 | 4822 111 30506 | 8.2 Ω | 0.33 W |
| 3611 | 4822 111 30561 | 1 kΩ | 0.33 W |
| 3623 | 4822 111 30506 | 8.2 Ω | 0.33 W |
| 3628 | 4822 116 53717 | 430 kΩ | 0.25 W |
| 3629 | 4822 116 51135 | 5.6 kΩ | 2.5 W |
| 3638 | 4822 111 30483 | 1 Ω | 0.33 W |
| 3639 | 4822 111 30483 | 1 Ω | 0.33 W |
| 3653 | 4822 111 30561 | 1 kΩ | 0.33 W |
| 3654 | 4822 111 30561 | 1 kΩ | 0.33 W |
| 3655 | 4822 116 40065 | PTC | |
| 3657 | 4822 115 10095 | 4.7 Ω | 7 W |
| 3665 | 4822 111 30499 | 4.7 Ω | 0.33 W |
| 3679 | 4822 112 41087 | 180 Ω | 5 W |
| 3694 | 4822 111 30508 | 10 Ω | 0.33 W |
| 3696 | 4822 116 53716 | 31.6 kΩ | 0.4 W |
| 3700 | 4822 100 20148 | 1 kΩ | potm. |
| 3896 | 4822 101 20838 | 4.7 kΩ | potm. |
| 3941 | 4822 111 30526 | 47 Ω | 0.33 W |
| 3944 | 4822 100 11083 | 5 kΩ | potm. |



CARRIER PANEL

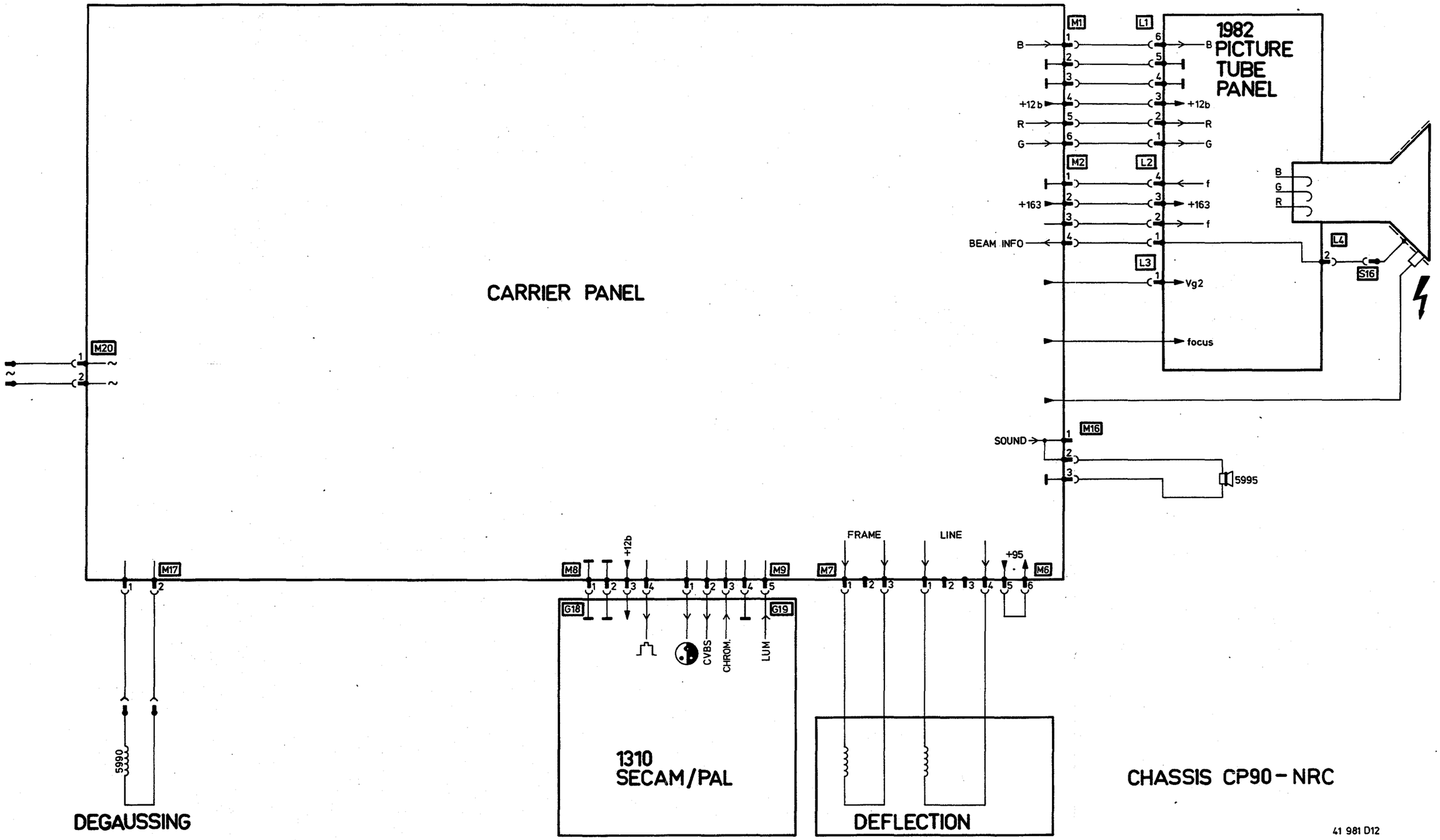
| | | | |
|---|---|---|---|
| 2267 | 4822 125 50045 | 20 pF | trimm. |
| 2608 | 4822 124 21208 | 4.7 µF | 50 V |
| 2610 | 5322 121 42523 | 8.2 nF | 2 kV |
| 2611 | 4822 121 42917 | 470 nF | 200 V |
| 2619 | 4822 122 31692 | 1.5 nF | 1 kV |
| 2652 | 4822 121 50627 | 470 nF | 250 V |
| 2657 | 4822 122 32769 | 2.2 nF | 1 kV |
| 2658 | 4822 122 32769 | 2.2 nF | 1 kV |
| 2659 | 4822 122 32769 | 2.2 nF | 1 kV |
| 2660 | 4822 122 32769 | 2.2 nF | 1 kV |
| 2663 | 4822 124 22052 | 100 µF | 385 V |
| 2667 | 4822 121 42786 | 33 nF | 100 V |
| 2678 | 4822 122 32069 | 470 pF | 1 kV |
| 2679 | 4822 122 31805 | 1 nF | 2 kV |
| 2680 | 4822 122 10375 | 68 pF | 1 kV |
| 2681 | 4822 122 33106 | 470 pF | 400 V |
| 2682 | 4822 122 40449 | 33 pF | 400 V |
| 2696 | 4822 124 41056 | 47 µF | 200 V |
| 2697 | 4822 124 41056 | 47 µF | 200 V |

(board)

| | | |
|---|---|---|
| M1 | 4822 265 40421 | 6P |
| M2 | 4822 265 30378 | 4P |
| M5 | 4822 267 50703 | 12P |
| M6 | 4822 265 40421 | 6P |
| M7 | 4822 264 40207 | 3P |
| M8 | 4822 417 50217 | 4P |
| M9 | 4822 267 40648 | 5P |
| M16 | 4822 264 40207 | 3P |
| M17 | 4822 265 30389 | 2P |
| M20 | 4822 265 40596 | 2P |

(cable)

| | | |
|---|---|---|
| M1 | 4822 267 40584 | 6P |
| M2 | 4822 267 40597 | 4P |
| M6 | 4822 267 40584 | 6P |
| M16 | 4822 267 40582 | 3P |
| M17 | 4822 267 40582 | 3P |
| M20 | 4822 290 60626 | 2P |


CARRIER PANEL
M20
M1
L1
1982
PICTURE
TUBE
PANEL
B
+12b
R
G
M2
L2
+163
BEAM INFO
L3
Vg2
focus
L4
S16
M16
SOUND
5995
M17
5990
DEGAUSSING
M8
+12b
M9
G18
G19
CVBS
CHROM.
LUM
1310
SECAM/PAL
M7
FRAME
LINE
M6
+95
DEFLECTION
CHASSIS CP90 – NRC
41 981 D12

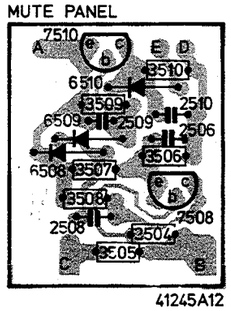
## PICTURE TUBE PANEL

| | | | |
|---|---|---|---|
| **Transistors** | | | |
| BC558 | 4822 130 40941 | | |
| BF483 | 4822 130 42607 | | |
| **Diodes** | | | |
| 1N4148–75 | 4822 130 33939 | | |
| **Resistors** | | | |
| 3406 | 5322 116 55147 | 12 kΩ | 2.5 W |
| 3407 | 4822 116 52399 | 1.5 kΩ | 0.5 W |
| 3412 | 4822 100 20168 | 1 kΩ | potm. |
| 3421 | 4822 100 20171 | 2.2 kΩ | potm. |
| 3426 | 5322 116 55147 | 12 kΩ | 2.5 W |
| 3427 | 4822 116 52399 | 1.5 kΩ | 0.5 W |
| 3432 | 4822 100 20168 | 1 kΩ | potm. |
| 3441 | 4822 100 20171 | 2.2 kΩ | potm. |
| 3446 | 5322 116 55147 | 12 kΩ | 2.5 W |
| 3447 | 4822 116 52399 | 1.5 kΩ | 0.5 W |
| 3452 | 4822 100 20168 | 1 kΩ | potm. |
| 3473 | 4822 111 30483 | 1 Ω | 0.33 W |
| 3474 | 4822 116 52399 | 1.5 kΩ | 0.5 W |
| 3475 | 4822 116 52399 | 1.5 kΩ | 0.5 W |
| **Coils** | | | |
| 5473 | 4822 157 52368 | | |
| **(board)** | | | |
| L1 | 4822 265 40421 | 6P | |
| L2 | 4822 265 30378 | 4P | |
| | 4822 267 30778 | Picture tube socket | |
| **(cable)** | | | |
| L1 | 4822 267 30546 | 6P | |
| L2 | 4822 267 30378 | 4P | |

## MUTE PANEL

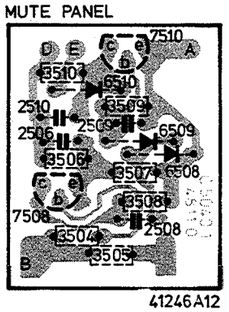
| | |
|---|---|
| **Transistors** | |
| BC548B | 4822 130 40937 |
| BC558B | 4822 130 44197 |
| **Diodes** | |
| 1N4148–75 | 4822 130 33939 |

MUTE PANEL



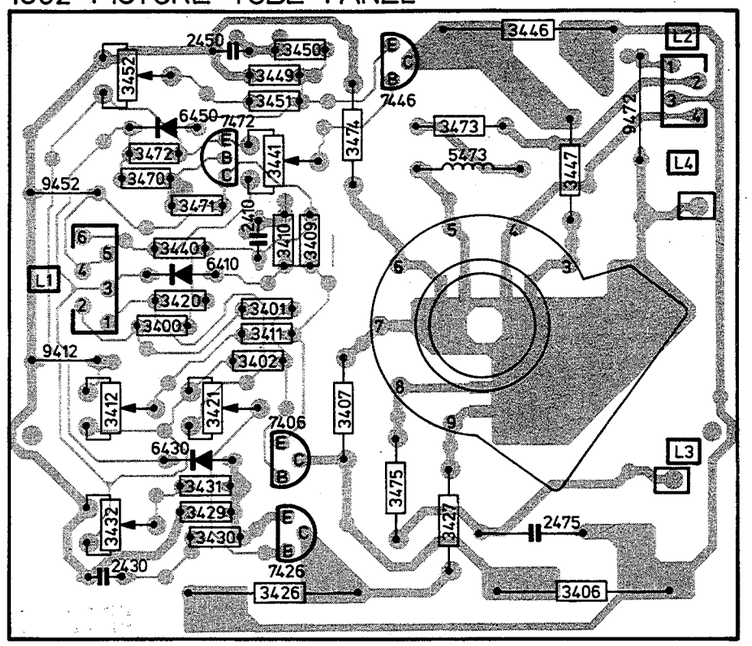

41245A12

MUTE PANEL




41246A12

## 1982 PICTURE TUBE PANEL




39 895 B12

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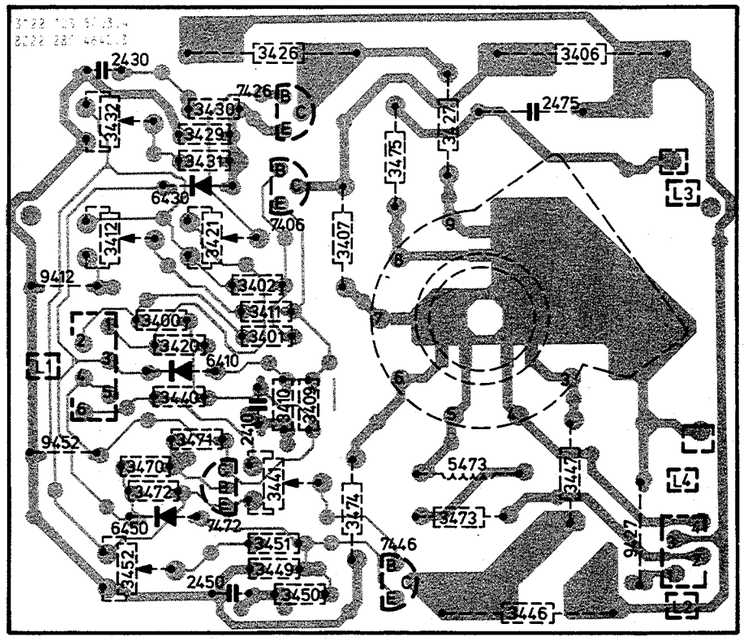
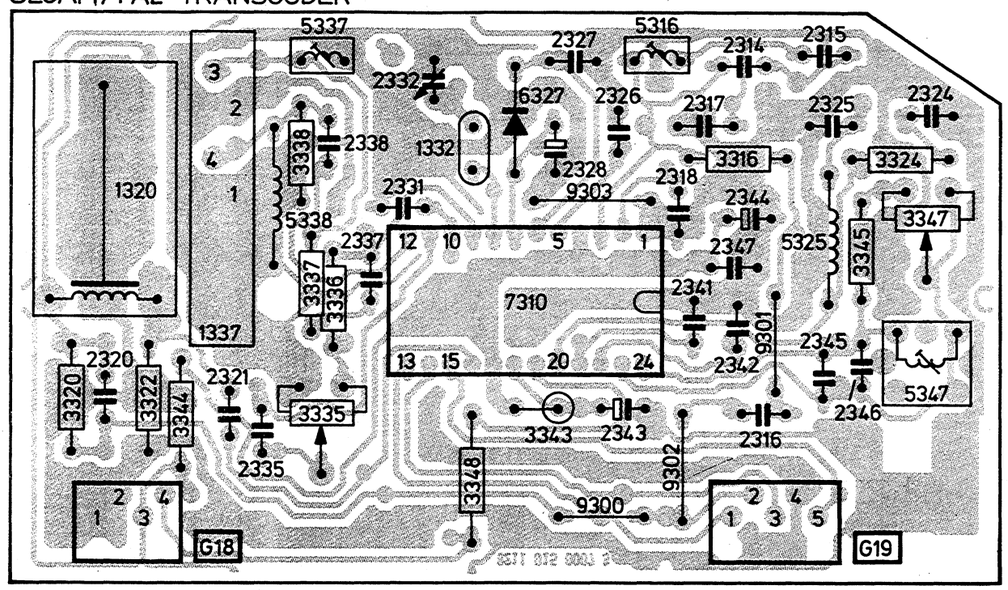


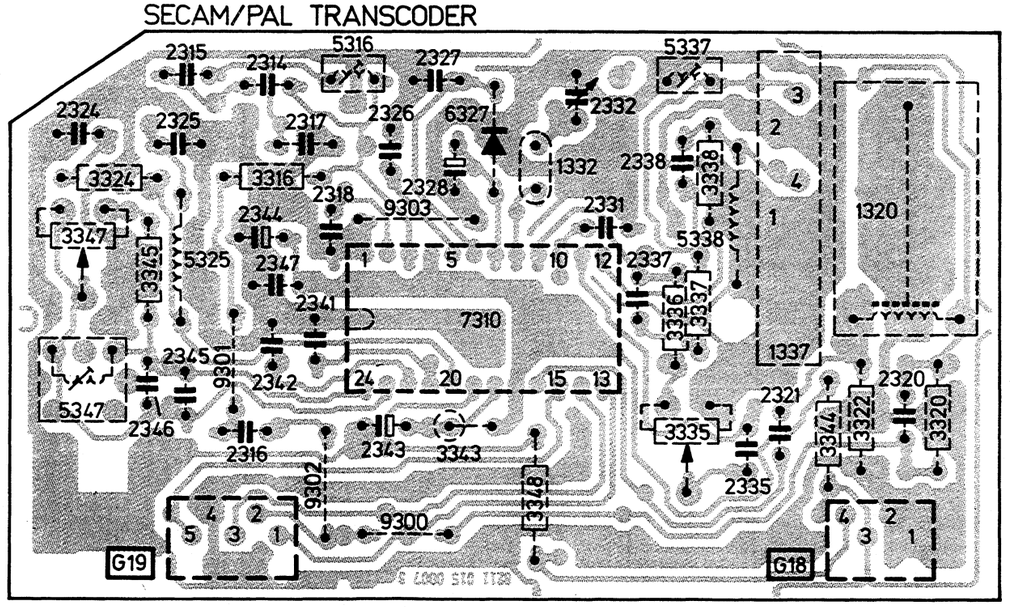

39 896 B12

## SECAM/PAL TRANSCODER




41 632 A12

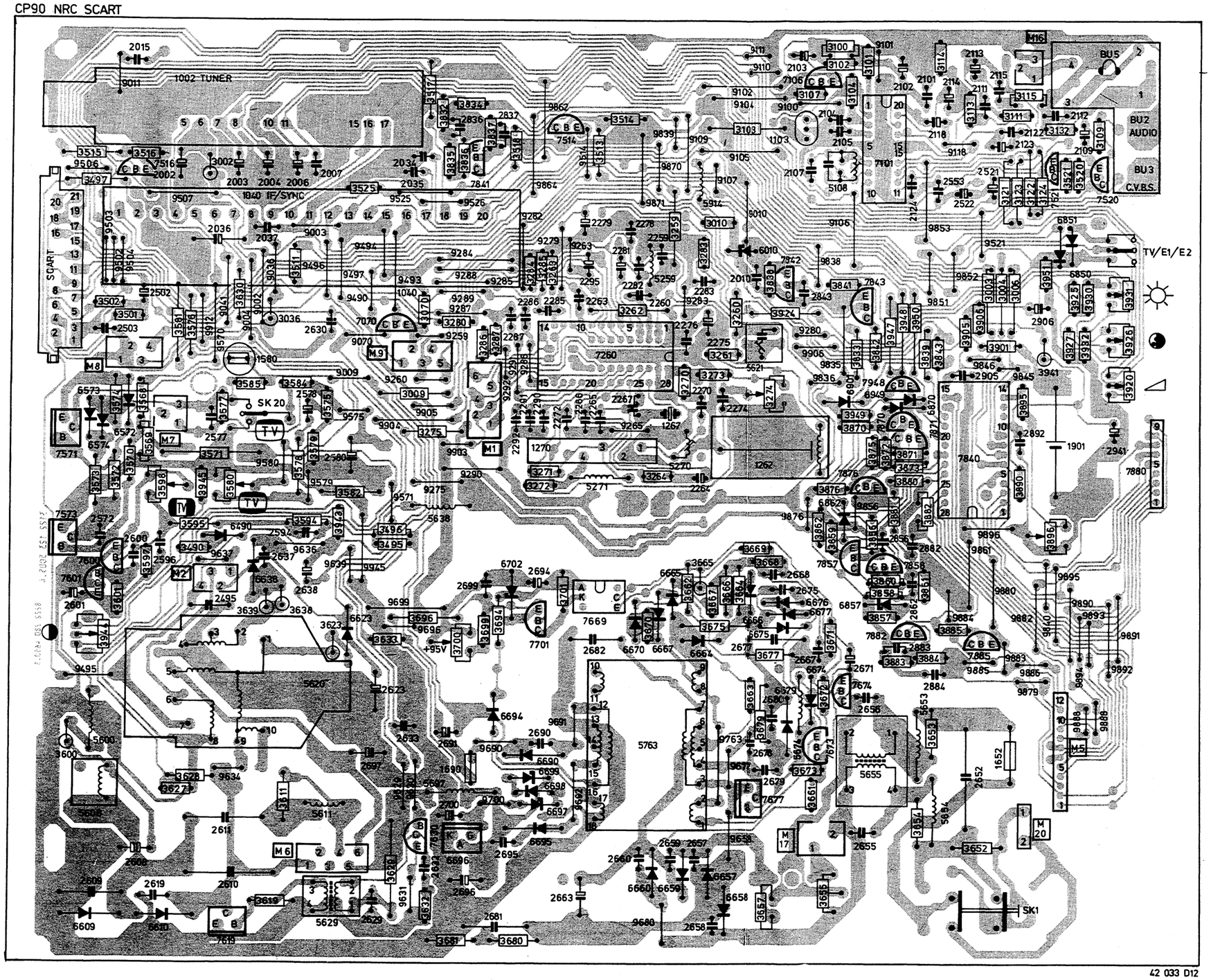
## SECAM/PAL TRANSCODER




41 633 A12

| | | |

CP90 NRC SCART




| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1002 | A 3 | 2681 | K 6 | 3619 | K 4 | 5655 | I10 | 7600 | G 2 | | |
| 1040 | C 3 | 2682 | H 7 | 3623 | H 4 | 5674 | I 9 | 7601 | G 2 | | |
| 1040 | D 5 | 2690 | I 6 | 3627 | I 3 | 5697 | I 5 | 7619 | K 3 | | |
| 1103 | B 9 | 2691 | I 6 | 3628 | I 3 | 5763 | I 8 | 7630 | J 5 | | |
| 1262 | F 9 | 2694 | G 6 | 3629 | J 5 | 5914 | C 8 | 7669 | G 7 | | |
| 1267 | E 8 | 2695 | J 6 | 3630 | D 3 | 6010 | C 9 | 7673 | I10 | | |
| 1270 | F 6 | 2696 | J 6 | 3632 | K 5 | 6490 | F 3 | 7674 | H10 | | |
| 1580 | E 4 | 2697 | I 5 | 3633 | H 5 | 6572 | E 2 | 7677 | I 9 | | |
| 1652 | I11 | 2699 | G 6 | 3638 | G 4 | 6573 | E 2 | 7701 | H 6 | | |
| 1690 | I 6 | 2700 | J 6 | 3639 | G 3 | 6574 | F 2 | 7840 | F11 | | |
| 1901 | E12 | 2836 | B 6 | 3652 | J11 | 6609 | K 2 | 7841 | C 6 | | |
| 2002 | C 3 | 2837 | B 6 | 3653 | I11 | 6610 | K 3 | 7842 | C 9 | | |
| 2003 | C 3 | 2843 | D 9 | 3654 | J10 | 6623 | G 5 | 7843 | D10 | | |
| 2004 | C 4 | 2856 | G10 | 3655 | K 9 | 6638 | G 4 | 7857 | G 9 | | |
| 2006 | C 4 | 2862 | G10 | 3657 | K 9 | 6657 | J 8 | 7858 | G10 | | |
| 2007 | B 4 | 2882 | G11 | 3661 | I 9 | 6658 | K 9 | 7870 | E10 | | |
| 2010 | D 9 | 2883 | H10 | 3662 | G 8 | 6659 | J 8 | 7871 | E11 | | |
| 2015 | A 2 | 2884 | H11 | 3663 | H 9 | 6660 | J 8 | 7876 | F10 | | |
| 2034 | B 5 | 2892 | E12 | 3664 | G 9 | 6664 | H 8 | 7880 | F13 | | |
| 2035 | C 5 | 2905 | E11 | 3665 | G 8 | 6665 | G 8 | 7882 | H10 | | |
| 2036 | C 3 | 2906 | D12 | 3666 | G 8 | 6666 | G 9 | 7885 | H11 | | |
| 2037 | C 4 | 2941 | F12 | 3667 | G 8 | 6667 | H 8 | 7888 | E10 | | |
| 2101 | A10 | 3002 | B 3 | 3668 | G 9 | 6670 | H 7 | 7948 | E13 | | |
| 2102 | A10 | 3003 | D11 | 3669 | G 9 | 6674 | H 9 | BU-2 | B13 | | |
| 2103 | A 9 | 3004 | D11 | 3670 | G 8 | 6675 | H 9 | BU-3 | B13 | | |
| 2104 | B 9 | 3006 | D11 | 3671 | H10 | 6676 | G 9 | BU-5 | A12 | | |
| 2105 | B10 | 3009 | E 5 | 3672 | H 9 | 6677 | G 9 | SK-1 | K12 | | |
| 2107 | B 9 | 3010 | C 8 | 3673 | I 9 | 6679 | H 9 | SK20 | E 4 | | |
| 2109 | B12 | 3036 | D 4 | 3675 | H 8 | 6690 | I 7 | | | | |
| 2111 | B11 | 3070 | D 5 | 3677 | H 9 | 6694 | I 6 | | | | |
| 2112 | B12 | 3100 | A10 | 3679 | I 9 | 6695 | J 6 | | | | |
| 2113 | A11 | 3101 | A10 | 3680 | K 6 | 6696 | J 6 | | | | |
| 2114 | A11 | 3102 | A10 | 3681 | K 6 | 6697 | J 7 | | | | |
| 2115 | B11 | 3103 | B 9 | 3694 | G 6 | 6698 | I 7 | | | | |
| 2118 | B11 | 3104 | B10 | 3696 | G 5 | 6699 | I 7 | | | | |
| 2122 | B12 | 3107 | B 9 | 3699 | H 6 | 6702 | G 6 | | | | |
| 2123 | B11 | 3109 | B12 | 3700 | H 6 | 6850 | D12 | | | | |
| 2124 | C10 | 3111 | B11 | 3701 | G 7 | 6851 | C12 | | | | |
| 2259 | C 8 | 3113 | B11 | 3832 | B 5 | 6857 | G10 | | | | |
| 2260 | D 8 | 3114 | A11 | 3833 | D10 | 6862 | F 9 | | | | |
| 2263 | D 7 | 3115 | B12 | 3834 | B 6 | 6870 | E11 | | | | |
| 2264 | F 8 | 3121 | C11 | 3835 | B 6 | 6901 | E10 | | | | |
| 2265 | E 7 | 3122 | C12 | 3836 | B 6 | 6949 | E10 | | | | |
| 2266 | E 7 | 3123 | C11 | 3837 | B 6 | 7070 | D 5 | | | | |
| 2267 | E 7 | 3124 | C12 | 3838 | D 9 | 7101 | B10 | | | | |
| 2270 | E 8 | 3132 | B12 | 3839 | D11 | 7106 | A 9 | | | | |
| 2272 | E 7 | 3259 | C 8 | 3841 | D10 | 7260 | D 7 | | | | |
| 2274 | E 9 | 3260 | D 9 | 3842 | D10 | 7514 | B 7 | | | | |
| 2275 | D 8 | 3261 | D 8 | 3843 | D11 | 7516 | B 3 | | | | |
| 2276 | D 8 | 3262 | D 7 | 3856 | F10 | 7520 | C12 | | | | |
| 2278 | C 8 | 3263 | D 7 | 3857 | G10 | 7521 | C12 | | | | |
| 2279 | C 7 | 3264 | F 8 | 3858 | G10 | 7571 | F 2 | | | | |
| 2281 | C 7 | 3270 | E 8 | 3859 | F10 | 7573 | F 2 | | | | |
| 2282 | D 7 | 3271 | F 6 | 3860 | G10 | 7600 | G 2 | | | | |
| 2283 | D 8 | 3272 | F 6 | 3861 | G11 | 7601 | G 2 | | | | |
| 2285 | D 7 | 3273 | E 8 | 3862 | F 9 | 7619 | K 3 | | | | |
| 2286 | D 6 | 3274 | E 9 | 3870 | E10 | 7630 | J 5 | | | | |
| 2287 | D 6 | 3275 | E 5 | 3871 | F10 | 7669 | G 7 | | | | |
| 2290 | E 6 | 3280 | D 6 | 3872 | F10 | 7673 | I10 | | | | |
| 2291 | E 6 | 3283 | C 8 | 3873 | F10 | 7674 | H10 | | | | |
| 2292 | E 6 | 3284 | D 6 | 3875 | F10 | 7677 | I 9 | | | | |
| 2295 | D 7 | 3285 | C 6 | 3876 | F 9 | 7701 | H 6 | | | | |
| 2495 | G 3 | 3286 | D 6 | 3880 | F10 | 7840 | F11 | | | | |
| 2502 | D 2 | 3287 | D 6 | 3881 | F10 | 7841 | C 6 | | | | |
| 2503 | D 2 | 3490 | G 3 | 3882 | F11 | 7842 | C 9 | | | | |
| 2521 | B11 | 3495 | G 5 | 3883 | H10 | 7843 | D10 | | | | |
| 2522 | C11 | 3496 | F 5 | 3884 | H11 | 7857 | G 9 | | | | |
| 2553 | C11 | 3497 | C 2 | 3885 | H11 | 7858 | G10 | | | | |
| 2572 | F 2 | 3501 | D 2 | 3890 | F11 | 7870 | E10 | | | | |
| 2577 | E 3 | 3502 | D 2 | 3895 | E12 | 7871 | E11 | | | | |
| 2578 | E 4 | 3511 | C 4 | 3896 | F12 | 7876 | F10 | | | | |
| 2580 | F 4 | 3513 | B 7 | 3901 | D11 | 7880 | F13 | | | | |
| 2594 | F 4 | 3514 | B 7 | 3905 | D11 | 7882 | H10 | | | | |
| 2596 | G 3 | 3515 | B 2 | 3906 | D11 | 7885 | H11 | | | | |
| 2600 | G 2 | 3516 | B 2 | 3920 | E13 | 7948 | E10 | | | | |
| 2601 | G 2 | 3517 | B 5 | 3924 | D 9 | BU-2 | B13 | | | | |
| 2608 | J 2 | 3518 | B 6 | 3925 | D12 | BU-3 | B13 | | | | |
| 2609 | J 2 | 3520 | B12 | 3926 | D13 | BU-5 | A12 | | | | |
| 2610 | J 3 | 3521 | B12 | 3927 | D12 | SK-1 | K12 | | | | |
| 2611 | J 3 | 3525 | C 5 | 3930 | D12 | SK20 | E 4 | | | | |
| 2619 | J 3 | 3568 | E 2 | 3931 | D13 | | | | | | |
| 2623 | H 5 | 3569 | E 2 | 3932 | D12 | | | | | | |
| 2629 | K 5 | 3570 | F 2 | 3941 | E12 | | | | | | |
| 2630 | D 4 | 3571 | F 3 | 3943 | F 4 | | | | | | |
| 2632 | J 5 | 3572 | F 2 | 3944 | H 2 | | | | | | |
| 2633 | I 5 | 3573 | F 2 | 3945 | F 3 | | | | | | |
| 2637 | G 4 | 3574 | E 2 | 3947 | D10 | | | | | | |
| 2638 | G 4 | 3575 | E 4 | 3948 | D10 | | | | | | |
| 2652 | I11 | 3576 | D 3 | 3949 | E10 | | | | | | |
| 2655 | J10 | 3577 | E 3 | 3950 | D10 | | | | | | |
| 2656 | H10 | 3578 | F 4 | 3951 | D12 | | | | | | |
| 2657 | J 8 | 3579 | F 4 | 5108 | C10 | | | | | | |
| 2658 | K 8 | 3580 | F 3 | 5259 | D 8 | | | | | | |
| 2659 | J 8 | 3581 | D 3 | 5270 | F 8 | | | | | | |
| 2660 | J 7 | 3582 | F 4 | 5271 | F 7 | | | | | | |
| 2663 | K 7 | 3584 | E 4 | 5600 | I 2 | | | | | | |
| 2667 | H 9 | 3585 | E 3 | 5608 | J 2 | | | | | | |
| 2668 | G 9 | 3594 | F 4 | 5611 | J 4 | | | | | | |
| 2671 | H10 | 3595 | F 3 | 5620 | H 4 | | | | | | |
| 2675 | G 9 | 3597 | G 2 | 5621 | E 9 | | | | | | |
| 2677 | H 9 | 3598 | F 3 | 5629 | K 4 | | | | | | |
| 2678 | I 9 | 3600 | I 2 | 5638 | F 5 | | | | | | |
| 2679 | I 9 | 3601 | G 2 | 5653 | H10 | | | | | | |
| 2680 | H 9 | 3611 | I 4 | 5654 | J11 | | | | | | |

PRS.02840
T32-728
BEH. BIJ 42033D12

## SYMBOLS USED IN CIRCUIT DIAGRAMS

| SYMBOL | TYPE | $t^{P}_{amb}$ 70° | TOLERANCE | SERIES |
|---|---|---|---|---|
| | SFR16T | 0.5 | 1E - 3M 5% | E24 |
| | SFR25H | 0.5 | 1E - 10M 5% | E24 |
| | MRS25 | 0.6 | 1E - 1M 1% | E24 |
| | MR30 | 0.5 | 1E - 1M 1% (2%) | E24 |
| | VR37 | 0.5 | 220K - 33M 5% | E24 |
| | PR37 | 1.6 | 1E - 1M 5% | E24 |
| | VR68 | 1 | 100K - 68M 5% | E24 |
| | MRS 16T | 0.4 | 10R – 100K | E24/E96 |

| SYMBOL | TYPE | VOLTAGE DC | TOLERANCE |
|---|---|---|---|
| | POLYESTER FLATFOIL | SEE NOTE | 10% |
| | PLATE CERAMIC | SEE NOTE | DEPENDING ON CAPACITY |
| | ELCO MINIATURE SINGLE | SEE NOTE | -10+50% |
| | ELCO SINGLE ENDED | SEE NOTE | ±20% |

NOTE:

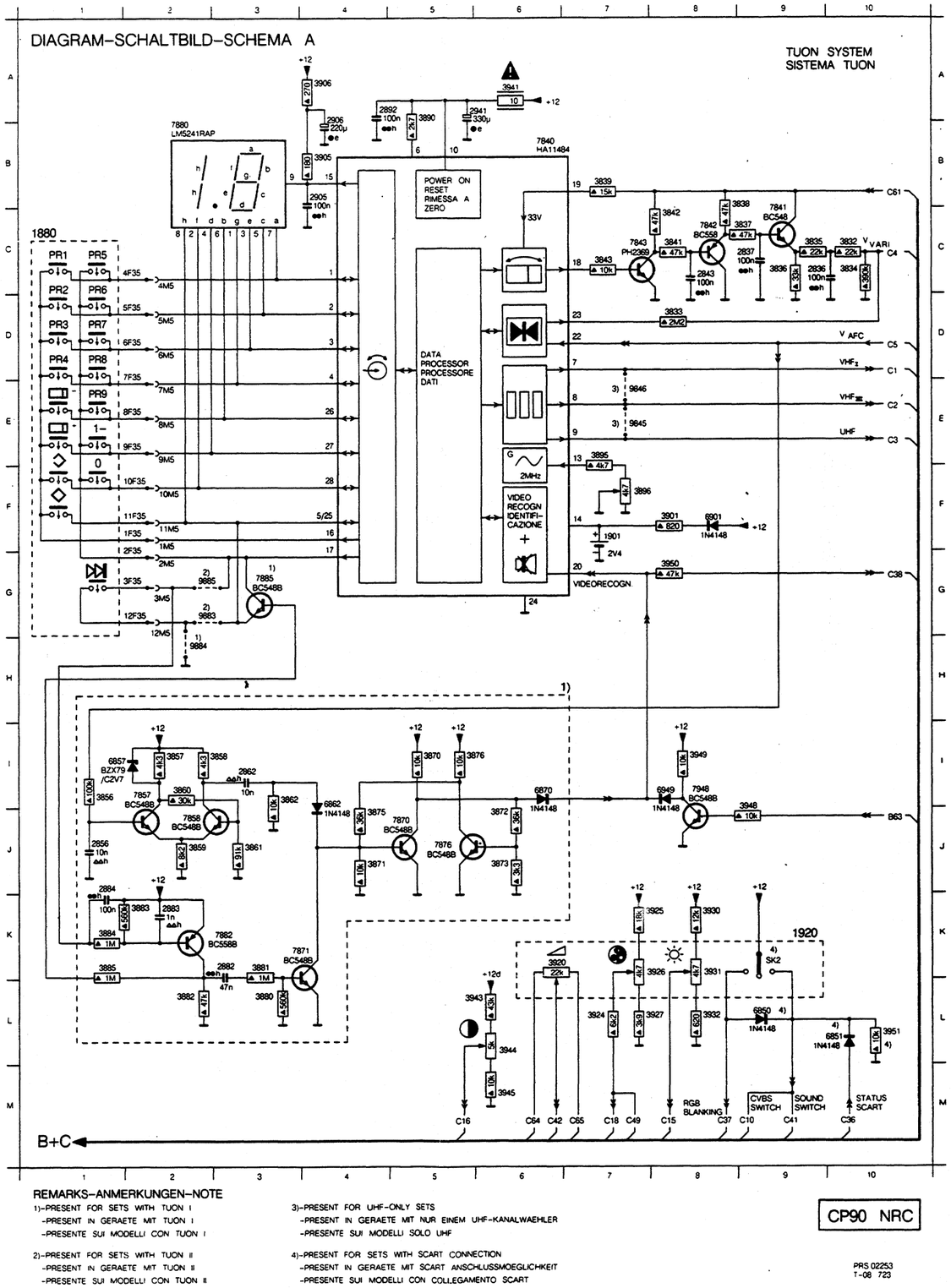
*

| | | | | |
|---|---|---|---|---|
| | f = 25V | q = 200V | x = 1000V | E = 20V |
| | g = 40V | r = 250V | z = 1600V | F = 35V |
| a = 2.5V | h = 63V | s = 300V | A = 1.6V | G = 50V |
| b = 4V | j = 100V | t = 350V | B = 6V | H = 75V |
| c = 6.3V | l = 125V | u = 400V | C = 12V | I = 80V |
| d = 10V | m = 150V | v = 500V | D = 15V | |
| e = 16V | n = 160V | w = 630V | | |

39 301 A13



| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1880 | C 1 | 2882 | K 3 | 3833 | D 8 | 3842 | C 8 | 3862 | I 3 | 3881 | K 3 | 3901 | F 8 | 3930 | K 8 | 3949 | I 8 | 6901 | F 8 | 7870 | J 5 | 9846 | E 7 |
| 1901 | F 7 | 2883 | K 2 | 3834 | C10 | 3843 | C 7 | 3870 | I 5 | 3882 | L 2 | 3905 | B 4 | 3931 | K 8 | 3950 | G 8 | 6949 | I 8 | 7871 | K 3 | 9883 | G 2 |
| 1920 | K 9 | 2884 | J 1 | 3835 | C 9 | 3856 | I 1 | 3871 | J 4 | 3883 | K 2 | 3906 | A 4 | 3932 | L 8 | 3951 | L10 | 7840 | B 6 | 7876 | J 5 | 9884 | H 2 |
| 2836 | C 9 | 2892 | A 5 | 3836 | C 9 | 3857 | I 2 | 3872 | J 6 | 3884 | K 1 | 3920 | K 6 | 3941 | A 6 | 6850 | L 9 | 7841 | C 9 | 7880 | B 2 | 9885 | G 2 |
| 2837 | C 9 | 2905 | B 4 | 3837 | C 9 | 3858 | I 3 | 3873 | J 6 | 3885 | K 1 | 3924 | L 7 | 3943 | L 6 | 6851 | L10 | 7842 | C 8 | 7882 | K 3 | SK2 | K 9 |
| 2843 | C 8 | 2906 | A 4 | 3838 | B 9 | 3859 | J 2 | 3875 | J 4 | 3890 | A 5 | 3925 | K 8 | 3944 | L 6 | 6857 | I 1 | 7843 | C 7 | 7885 | G 3 | | |
| 2856 | J 1 | 2941 | A 6 | 3839 | B 7 | 3860 | I 2 | 3876 | I 6 | 3895 | E 7 | 3926 | K 8 | 3945 | M 6 | 6862 | I 4 | 7857 | I 2 | 7948 | I 8 | | |
| 2862 | J 3 | 3832 | C10 | 3841 | C 8 | 3861 | J 3 | 3880 | L 3 | 3896 | F 7 | 3927 | L 8 | 3948 | I 9 | 6870 | I 6 | 7858 | J 2 | 9845 | E 7 | | |




REMARKS–ANMERKUNGEN–NOTE

1)-PRESENT FOR SETS WITH TUON I
-PRESENT IN GERAETE MIT TUON I
-PRESENTE SUI MODELLI CON TUON I

2)-PRESENT FOR SETS WITH TUON II
-PRESENT IN GERAETE MIT TUON II
-PRESENTE SUI MODELLI CON TUON II

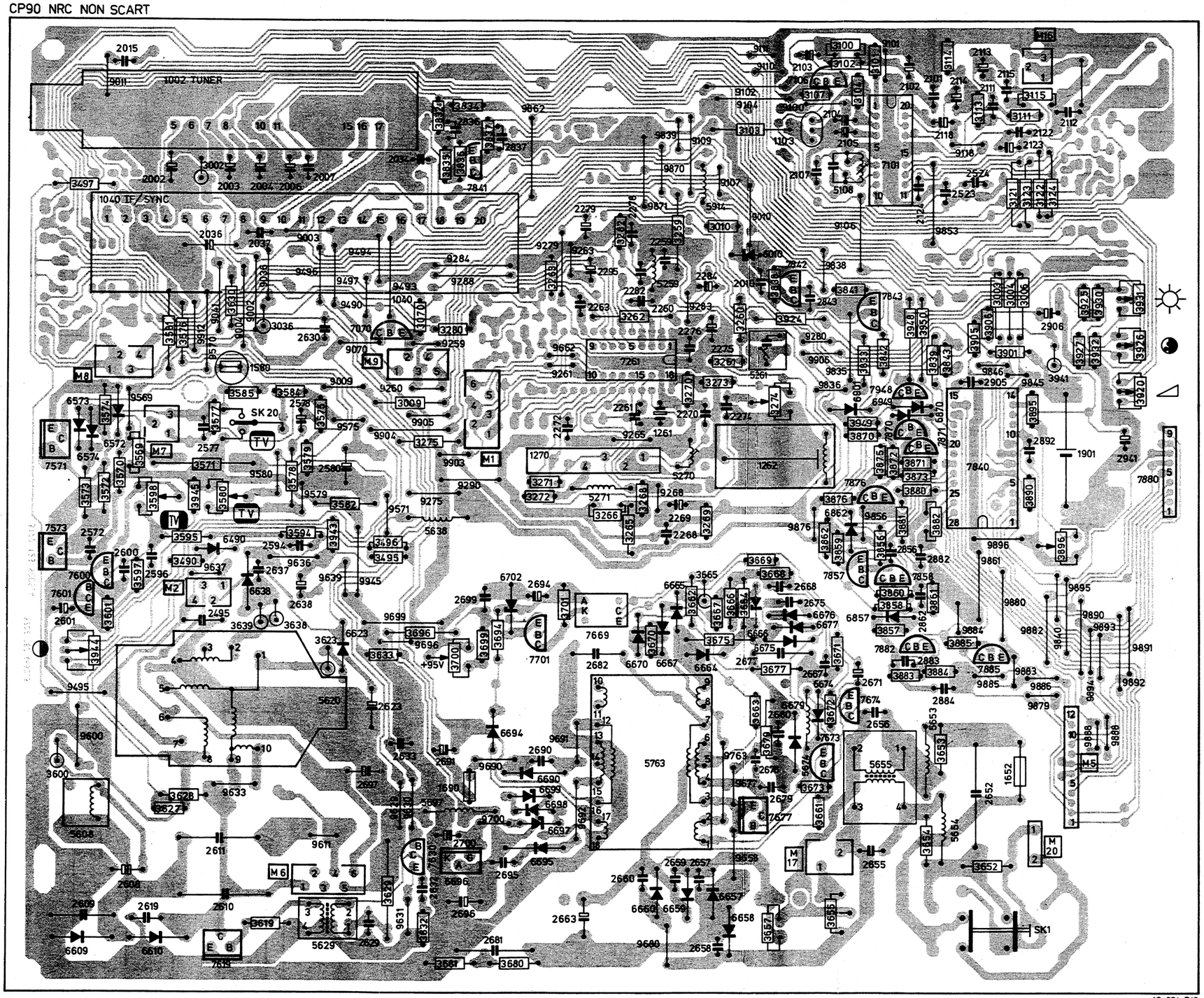
3)-PRESENT FOR UHF-ONLY SETS
-PRESENT IN GERAETE MIT NUR EINEM UHF-KANALWAEHLER
-PRESENTE SUI MODELLI SOLO UHF

4)-PRESENT FOR SETS WITH SCART CONNECTION
-PRESENT IN GERAETE MIT SCART ANSCHLUSSMOEGLICHKEIT
-PRESENTE SUI MODELLI CON COLLEGAMENTO SCART

CP90 NRC

PRS 02253
T-08 723

CP90 NRC NON SCART




42 031 D12

PRS.02841

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1002 | A 3 | 2892 | E12 | 3833 | D10 | 7070 | D 5 | | | | | | | |
| | 1040 | C 3 | 2905 | E11 | 3834 | B 6 | 7101 | B10 | | | | | | | |
| | 1040 | D 5 | 2906 | D12 | 3835 | B 6 | 7106 | A 9 | | | | | | | |
| | 1103 | B 9 | 2941 | F12 | 3836 | B 6 | 7261 | D 7 | | | | | | | |
| | 1261 | E 8 | 3002 | B 3 | 3837 | B 6 | 7571 | F 2 | | | | | | | |
| A | 1262 | F 9 | 3003 | D11 | 3838 | D 9 | 7573 | F 1 | | | | | | | |
| | 1270 | F 6 | 3004 | D11 | 3839 | D11 | 7600 | G 2 | | | | | | | |
| | 1580 | E 4 | 3006 | D11 | 3841 | D10 | 7601 | G 2 | | | | | | | |
| | 1652 | I11 | 3009 | E 5 | 3842 | D10 | 7619 | K 3 | | | | | | | |
| | 1690 | I 6 | 3010 | C 8 | 3843 | D11 | 7630 | J 5 | | | | | | | |
| | 1901 | E12 | 3036 | D 4 | 3856 | F10 | 7669 | G 7 | | | | | | | |
| | 2002 | C 3 | 3070 | D 5 | 3857 | G10 | 7673 | I10 | | | | | | | |
| | 2003 | C 3 | 3100 | A10 | 3858 | G10 | 7674 | H10 | | | | | | | |
| | 2004 | C 4 | 3101 | A10 | 3859 | G10 | 7677 | I 9 | | | | | | | |
| | 2006 | C 4 | 3102 | A10 | 3860 | G10 | 7701 | H 6 | | | | | | | |
| B | 2007 | B 4 | 3103 | B 9 | 3861 | G11 | 7840 | F11 | | | | | | | |
| | 2010 | D 9 | 3104 | B10 | 3862 | F 9 | 7841 | C 6 | | | | | | | |
| | 2015 | A 2 | 3107 | B 9 | 3870 | E10 | 7842 | C 9 | | | | | | | |
| | 2034 | B 5 | 3111 | B11 | 3871 | F10 | 7843 | D10 | | | | | | | |
| | 2036 | C 3 | 3113 | B11 | 3872 | F10 | 7857 | G 9 | | | | | | | |
| | 2037 | C 4 | 3114 | A11 | 3873 | F10 | 7858 | G10 | | | | | | | |
| | 2101 | A10 | 3115 | B12 | 3875 | F10 | 7870 | E10 | | | | | | | |
| | 2102 | A10 | 3121 | C11 | 3876 | F 9 | 7871 | E11 | | | | | | | |
| | 2103 | A 9 | 3122 | C12 | 3880 | F10 | 7876 | F10 | | | | | | | |
| C | 2104 | B 9 | 3123 | C11 | 3881 | F10 | 7880 | F13 | | | | | | | |
| | 2105 | B10 | 3124 | C12 | 3882 | F11 | 7882 | H10 | | | | | | | |
| | 2107 | B 9 | 3259 | C 8 | 3883 | H10 | 7885 | H11 | | | | | | | |
| | 2111 | B11 | 3260 | D 9 | 3884 | H11 | 7948 | E10 | | | | | | | |
| | 2112 | B12 | 3261 | D 8 | 3885 | H11 | SK-1 | K12 | | | | | | | |
| | 2113 | A11 | 3262 | D 7 | 3890 | F11 | SK20 | E 4 | | | | | | | |
| | 2114 | A11 | 3263 | D 7 | 3895 | E12 | | | | | | | | | |
| | 2115 | A11 | 3270 | E 8 | 3896 | G12 | | | | | | | | | |
| D | 2118 | B11 | 3271 | F 6 | 3901 | D11 | | | | | | | | | |
| | 2122 | B12 | 3272 | F 6 | 3905 | D11 | | | | | | | | | |
| | 2123 | B11 | 3273 | E 8 | 3906 | D11 | | | | | | | | | |
| | 2124 | C10 | 3274 | E 9 | 3920 | E13 | | | | | | | | | |
| | 2259 | C 8 | 3275 | E 5 | 3924 | D 9 | | | | | | | | | |
| | 2280 | D 8 | 3280 | D 6 | 3925 | D12 | | | | | | | | | |
| | 2281 | E 7 | 3490 | G 3 | 3926 | D13 | | | | | | | | | |
| | 2263 | D 7 | 3495 | G 5 | 3927 | D12 | | | | | | | | | |
| | 2270 | E 8 | 3496 | F 5 | 3930 | D12 | | | | | | | | | |
| | 2272 | E 7 | 3497 | C 2 | 3931 | D13 | | | | | | | | | |
| E | 2274 | E 9 | 3569 | E 2 | 3932 | D12 | | | | | | | | | |
| | 2275 | D 8 | 3570 | F 2 | 3941 | E12 | | | | | | | | | |
| | 2276 | D 8 | 3571 | F 3 | 3943 | F 4 | | | | | | | | | |
| | 2278 | C 8 | 3572 | F 2 | 3944 | H 2 | | | | | | | | | |
| | 2279 | C 7 | 3573 | F 2 | 3945 | F 3 | | | | | | | | | |
| | 2282 | D 7 | 3574 | E 2 | 3948 | D10 | | | | | | | | | |
| | 2284 | D 8 | 3575 | E 4 | 3949 | E10 | | | | | | | | | |
| | 2495 | G 3 | 3576 | D 3 | 3950 | D10 | | | | | | | | | |
| | 2572 | F 2 | 3577 | E 3 | 3951 | D12 | | | | | | | | | |
| F | 2577 | E 3 | 3578 | F 4 | 5108 | C10 | | | | | | | | | |
| | 2578 | E 4 | 3579 | F 4 | 5259 | D 8 | | | | | | | | | |
| | 2580 | F 4 | 3580 | F 3 | 5270 | F 8 | | | | | | | | | |
| | 2594 | G 4 | 3581 | D 3 | 5271 | F 7 | | | | | | | | | |
| | 2596 | G 3 | 3582 | F 4 | 5608 | J 2 | | | | | | | | | |
| | 2600 | G 2 | 3584 | E 4 | 5620 | H 4 | | | | | | | | | |
| | 2601 | G 2 | 3585 | E 3 | 5621 | E 9 | | | | | | | | | |
| | 2608 | J 2 | 3594 | F 4 | 5629 | K 4 | | | | | | | | | |
| | 2609 | J 2 | 3595 | F 3 | 5638 | F 5 | | | | | | | | | |
| G | 2611 | J 3 | 3597 | G 2 | 5653 | H10 | | | | | | | | | |
| | 2619 | J 2 | 3598 | F 3 | 5654 | J11 | | | | | | | | | |
| | 2623 | H 5 | 3600 | I 2 | 5655 | I10 | | | | | | | | | |
| | 2629 | K 5 | 3601 | G 2 | 5674 | I 9 | | | | | | | | | |
| | 2630 | D 4 | 3619 | K 4 | 5697 | I 5 | | | | | | | | | |
| | 2632 | J 5 | 3623 | H 4 | 5763 | I 8 | | | | | | | | | |
| | 2633 | I 5 | 3627 | I 3 | 5914 | C 8 | | | | | | | | | |
| | 2637 | G 4 | 3628 | I 3 | 6010 | C 9 | | | | | | | | | |
| | 2638 | G 4 | 3629 | J 5 | 6490 | F 3 | | | | | | | | | |
| H | 2652 | I11 | 3630 | D 3 | 6572 | E 2 | | | | | | | | | |
| | 2655 | J10 | 3632 | K 5 | 6573 | E 2 | | | | | | | | | |
| | 2656 | H10 | 3633 | H 5 | 6574 | F 2 | | | | | | | | | |
| | 2657 | J 8 | 3638 | G 4 | 6609 | K 2 | | | | | | | | | |
| | 2658 | K 8 | 3639 | G 3 | 6610 | K 3 | | | | | | | | | |
| | 2659 | J 8 | 3652 | J11 | 6623 | G 5 | | | | | | | | | |
| | 2660 | J 7 | 3653 | I11 | 6638 | G 4 | | | | | | | | | |
| | 2663 | K 7 | 3654 | J10 | 6657 | J 8 | | | | | | | | | |
| | 2667 | H 9 | 3655 | K 9 | 6658 | K 9 | | | | | | | | | |
| I | 2668 | G 9 | 3657 | K 9 | 6659 | J 8 | | | | | | | | | |
| | 2671 | H10 | 3661 | I 9 | 6660 | J 8 | | | | | | | | | |
| | 2675 | G 9 | 3662 | G 8 | 6664 | H 8 | | | | | | | | | |
| | 2677 | H 9 | 3663 | H 9 | 6665 | G 8 | | | | | | | | | |
| | 2678 | I 9 | 3664 | G 9 | 6666 | G 9 | | | | | | | | | |
| | 2679 | I 9 | 3665 | G 8 | 6667 | H 8 | | | | | | | | | |
| | 2680 | H 9 | 3666 | G 8 | 6670 | H 7 | | | | | | | | | |
| | 2681 | K 6 | 3667 | G 8 | 6674 | H 9 | | | | | | | | | |
| | 2682 | H 7 | 3668 | G 9 | 6675 | H 9 | | | | | | | | | |
| J | 2690 | I 6 | 3669 | G 9 | 6676 | G 9 | | | | | | | | | |
| | 2691 | I 6 | 3670 | H 8 | 6677 | G 9 | | | | | | | | | |
| | 2694 | G 6 | 3671 | H10 | 6679 | H 9 | | | | | | | | | |
| | 2695 | J 6 | 3672 | H 9 | 6690 | I 7 | | | | | | | | | |
| | 2696 | K 6 | 3673 | I 9 | 6694 | I 6 | | | | | | | | | |
| | 2697 | I 5 | 3675 | H 8 | 6695 | J 6 | | | | | | | | | |
| | 2699 | G 6 | 3677 | H 9 | 6696 | J 6 | | | | | | | | | |
| | 2700 | J 6 | 3679 | I 9 | 6697 | J 7 | | | | | | | | | |
| K | 2836 | B 6 | 3680 | K 6 | 6698 | I 7 | | | | | | | | | |
| | 2837 | B 6 | 3681 | K 6 | 6699 | I 7 | | | | | | | | | |
| | 2843 | D 9 | 3694 | G 6 | 6702 | G 6 | | | | | | | | | |
| | 2856 | G10 | 3696 | G 5 | 6857 | G10 | | | | | | | | | |
| | 2862 | G10 | 3699 | H 6 | 6862 | F 9 | | | | | | | | | |
| | 2882 | G11 | 3700 | H 6 | 6870 | E11 | | | | | | | | | |
| | 2883 | H10 | 3701 | G 7 | 6901 | E10 | | | | | | | | | |
| | 2884 | H11 | 3832 | B 5 | 6949 | E10 | | | | | | | | | |

# DIAGRAM–SCHALTBILD–SCHEMA B

1040 -2B SYNCHRONISATION–SINCRONIZZAZIONE

HORIZONTAL
ORIZZONTALE

EAST–WEST
OST–WEST
EST–OVEST

DEGAUSSING
SMAGNETTIZZAZIONE

SUPPLY–SPEISUNG
ALIMENTAZIONE

VERTICAL
VERTIKAL
VERTICALE

A+C

## REMARKS–ANMERKUNGEN–NOTE

1)–PRESENT FOR SETS WITH SCART CONNECTION
–PRESENT IN GERAETEN MIT SCART ANSCHLUSSMOEGLICHKEIT
–PRESENTE SUI MODELLI CON COLLEGAMENTO SCART

2)–NOT PRESENT FOR SETS WITH SCART CONNECTION
–NICHT PRESENT IN GERAETEN MIT SCART ANSCHLUSSMOEGLICHKEIT
–ASSENTE SUI MODELLI CON COLLEGAMENTO SCART

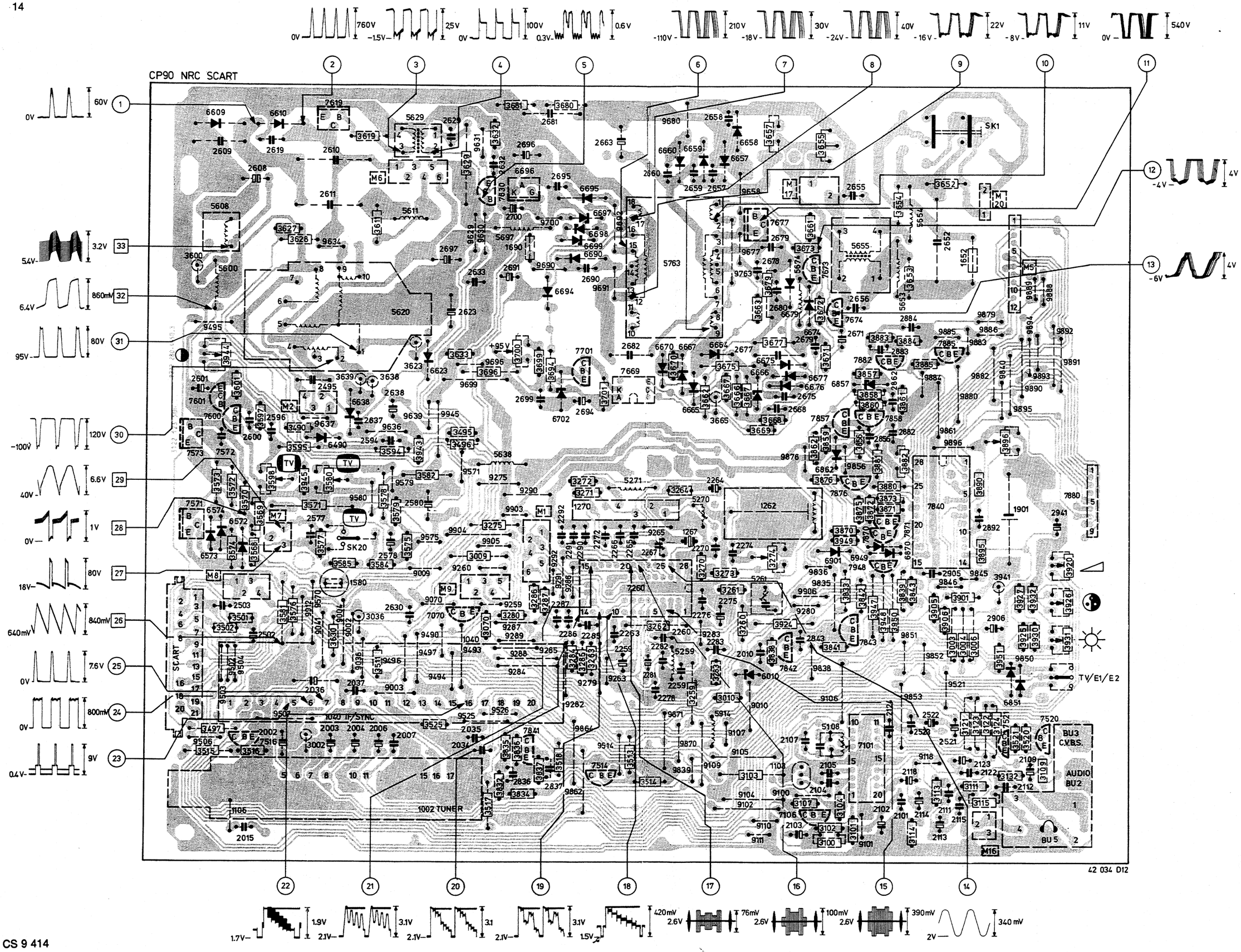
3)–PRESENT FOR 21" SETS
–PRESENT IN 21" GERAETEN
–PRESENTE SUI MODELLI 21"

CP90 NRC

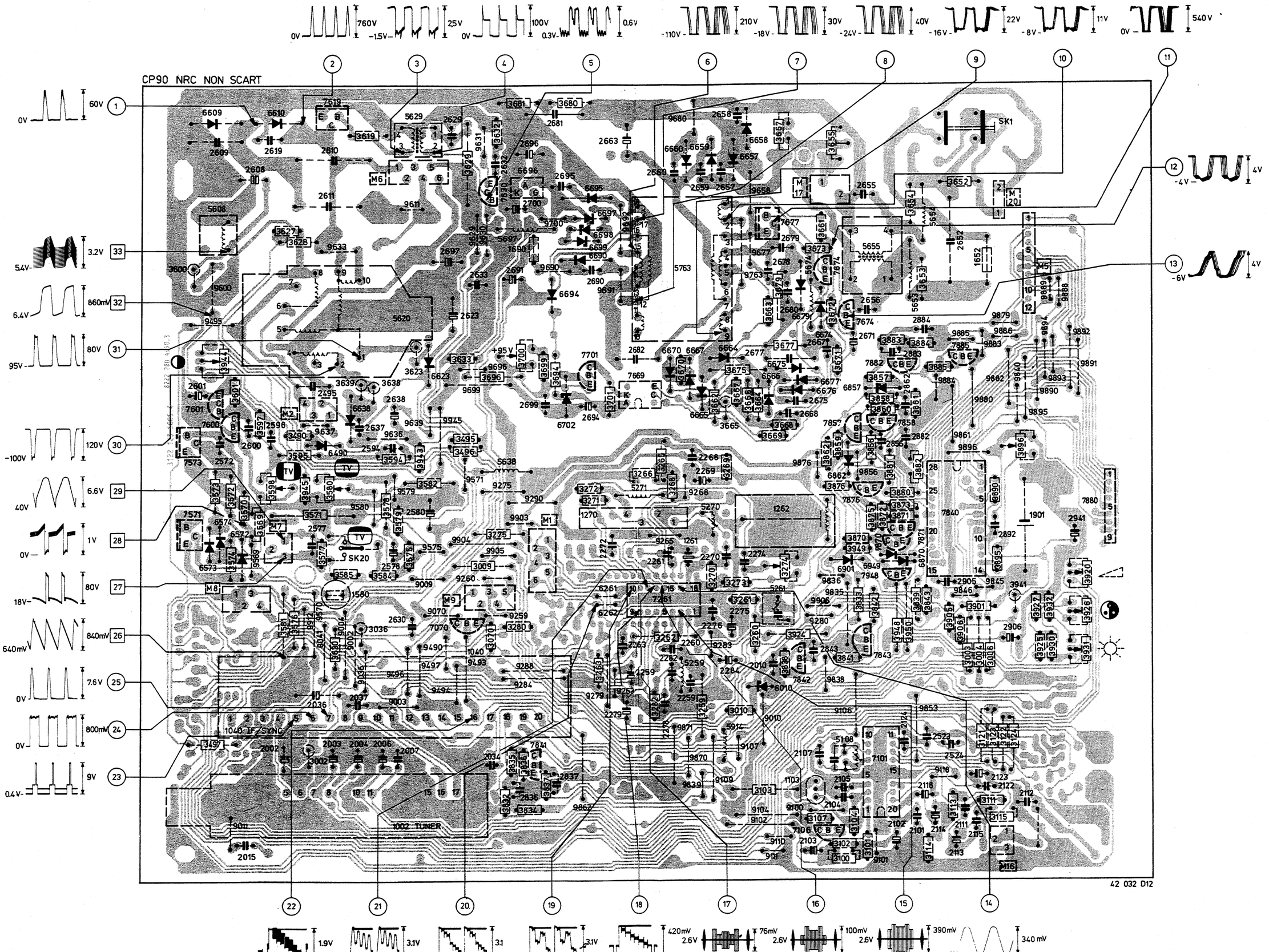
PRS.02249
T–08 722

CS 9 413

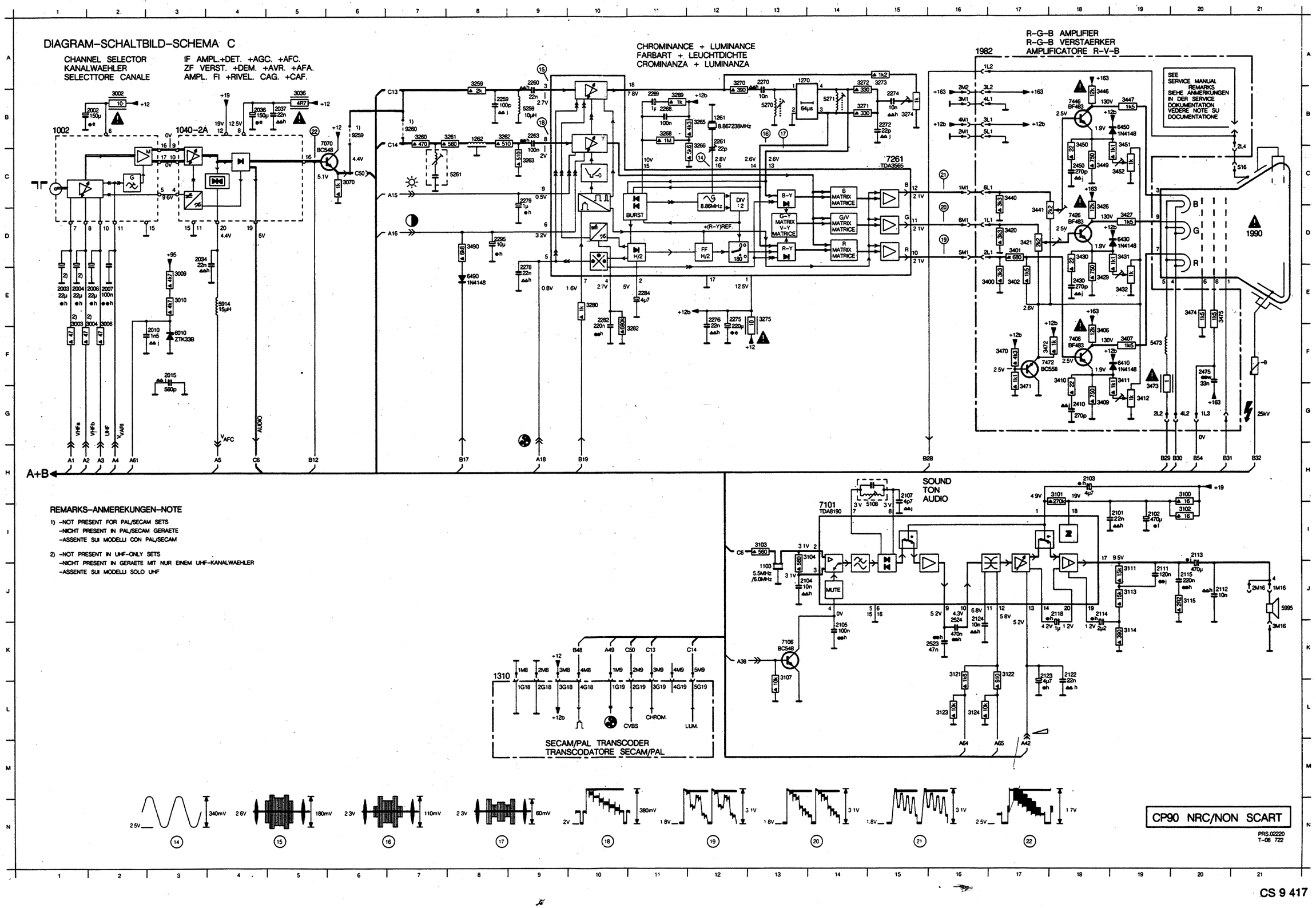
| | | | |
|---|---|---|---|
| 1040 | A 2 | 6667 | K 2 |
| 1580 | H16 | 6670 | K 2 |
| 1652 | G 2 | 6674 | J 6 |
| 1690 | G 9 | 6675 | J 6 |
| 2036 | A 6 | 6676 | J 6 |
| 2037 | A 7 | 6677 | J 6 |
| 2495 | B16 | 6679 | I 7 |
| 2572 | K15 | 6690 | G 8 |
| 2577 | H17 | 6694 | J 8 |
| 2578 | J17 | 6695 | I 8 |
| 2580 | J18 | 6696 | J10 |
| 2594 | D20 | 6697 | J11 |
| 2596 | D19 | 6698 | J11 |
| 2600 | D18 | 6699 | J12 |
| 2601 | D20 | 6702 | L10 |
| 2608 | D16 | 7571 | H15 |
| 2609 | D12 | 7573 | K16 |
| 2610 | D12 | 7600 | D18 |
| 2611 | C15 | 7601 | D17 |
| 2619 | D11 | 7619 | C11 |
| 2623 | C17 | 7630 | D10 |
| 2629 | D10 | 7669 | I 2 |
| 2630 | E 9 | 7669 | J10 |
| 2632 | D10 | 7673 | I 4 |
| 2633 | E 9 | 7674 | I 5 |
| 2637 | E15 | 7677 | I 6 |
| 2638 | E15 | 7701 | L 9 |
| 2652 | G 2 | 9600 | D17 |
| 2655 | H 3 | 9611 | C15 |
| 2656 | G 3 | 9630 | D 9 |
| 2657 | G 5 | 9633 | D13 |
| 2658 | H 5 | 9634 | C13 |
| 2659 | G 6 | SK1 | F 1 |
| 2660 | H 6 | SK20 | I 18 |
| 2663 | H 7 | | |
| 2667 | K 3 | | |
| 2668 | J 3 | | |
| 2671 | I 4 | | |
| 2675 | J 6 | | |
| 2677 | L 5 | | |
| 2678 | I 7 | | |
| 2679 | I 7 | | |
| 2680 | I 7 | | |
| 2681 | L 2 | | |
| 2682 | L 2 | | |
| 2690 | F 8 | | |
| 2691 | G 9 | | |
| 2694 | J 9 | | |
| 2695 | I 8 | | |
| 2696 | I 9 | | |
| 2697 | B13 | | |
| 2699 | L 8 | | |
| 2700 | J10 | | |
| 3036 | A 7 | | |
| 3038 | D 4 | | |
| 3055 | A 3 | | |
| 3495 | B16 | | |
| 3496 | B15 | | |
| 3497 | E 4 | | |
| 3569 | K15 | | |
| 3570 | K15 | | |
| 3571 | H15 | | |
| 3572 | J15 | | |
| 3573 | J16 | | |
| 3574 | I16 | | |
| 3575 | J17 | | |
| 3576 | J16 | | |
| 3577 | I17 | | |
| 3578 | J17 | | |
| 3579 | K17 | | |
| 3580 | L17 | | |
| 3581 | K17 | | |
| 3582 | K18 | | |
| 3584 | I18 | | |
| 3585 | I19 | | |
| 3594 | D20 | | |
| 3595 | D19 | | |
| 3597 | D19 | | |
| 3598 | E19 | | |
| 3600 | C16 | | |
| 3601 | D17 | | |
| 3611 | C15 | | |
| 3619 | D11 | | |
| 3623 | C16 | | |
| 3627 | C10 | | |
| 3628 | C12 | | |
| 3629 | C 9 | | |
| 3630 | D 9 | | |
| 3632 | E10 | | |
| 3633 | D 9 | | |
| 3638 | D14 | | |
| 3639 | E14 | | |
| 3652 | H 1 | | |
| 3653 | G 3 | | |
| 3654 | H 3 | | |
| 3655a | G 4 | | |
| 3655b | G 4 | | |
| 3657 | G 4 | | |
| 3661 | I 5 | | |
| 3662 | H 3 | | |
| 3663 | I 2 | | |
| 3664 | J 3 | | |
| 3665 | I 2 | | |
| 3666 | J 3 | | |
| 3667 | K 3 | | |
| 3668 | J 3 | | |
| 3669 | I 3 | | |
| 3670 | K 2 | | |
| 3671 | I 3 | | |
| 3672 | J 4 | | |
| 3673 | I 5 | | |
| 3675 | K 6 | | |
| 3677 | L 6 | | |
| 3679 | I 7 | | |
| 3680 | L 2 | | |
| 3681 | L 3 | | |
| 3694 | J 9 | | |
| 3696 | L 9 | | |
| 3699 | L 9 | | |
| 3700 | L 9 | | |
| 3701 | K10 | | |
| 5600 | C17 | | |
| 5608 | C16 | | |
| 5611 | C15 | | |
| 5620 | A13 | | |
| 5629 | D10 | | |
| 5638 | E16 | | |
| 5653 | G 3 | | |
| 5654 | H 3 | | |
| 5655 | G 3 | | |
| 5674 | I 5 | | |
| 5697 | I 12 | | |
| 5763 | G 8 | | |
| 5990 | H 4 | | |
| 6572 | I 15 | | |
| 6573 | J16 | | |
| 6574 | J15 | | |
| 6609 | D12 | | |
| 6610 | D12 | | |
| 6623 | C17 | | |
| 6638 | E15 | | |
| 6657 | G 5 | | |
| 6658 | H 5 | | |
| 6659 | G 6 | | |
| 6660 | H 6 | | |
| 6664 | J 2 | | |
| 6665 | I 2 | | |
| 6666 | J 2 | | |


CP90 NRC SCART
SCART
1002 IF/SYNC
1002 TUNER
SK1
SK20
TV/E1/E2
BU3 C.V.B.S.
AUDIO BU2
BU 5
0V 760V -1.5V 25V 0V 100V 0.3V 0.6V
-110V 210V -18V 30V -24V 40V -16V 22V -8V 11V 0V 540V
0V 60V 1
5.4V 3.2V 33
6.4V 860mV 32
95V 80V 31
-100V 120V 30
40V 6.6V 29
0V 1V 28
18V 80V 27
640mV 840mV 26
0V 7.6V 25
0V 800mV 24
0.4V 9V 23
-4V 4V 12
-6V 4V 13
1.7V 1.9V 22
2.1V 3.1V 21
2.1V 3.1 20
2.1V 3.1V 19
1.5V 420mV 18
2.6V 76mV 17
2.6V 100mV 16
2.6V 390mV 15
2V 340 mV 14
42 034 D12

| | | |


CP90 NRC NON SCART
0V 760V -1.5V 25V 0V 100V 0.3V 0.6V
-110V 210V -18V 30V -24V 40V -16V 22V -8V 11V 0V 540V
0V 60V 1
5.4V 3.2V 33
6.4V 860mV 32
95V 80V 31
-100V 120V 30
40V 6.6V 29
0V 1V 28
18V 80V 27
640mV 840mV 26
0V 7.6V 25
0V 800mV 24
0.4V 9V 23
-4V 4V 12
-6V 4V 13
1002 TUNER
1040 IF/SYNC
SK1
SK20
42 032 D12
1.7V 1.9V 2.1V 3.1V 2.1V 3.1 2.1V 3.1V 1.5V 420mV 2.6V 76mV 2.6V 100mV 2.6V 390mV 2V 340 mV
22 21 20 19 18 17 16 15 14

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1002 | B 1 | 1982 | A16 | 2010 | F 3 | 2103 | H18 | 2114 | J18 | 2260 | A 9 | 2274 | B15 | 2295 | D 8 | 3002 | B 2 | 3070 | C 6 | 3111 | J19 | 3124 | L16 | 3266 | B12 | 3274 | B15 | 3406 | F18 | 3421 | D17 | 3440 | C17 | 3452 | C19 | 3490 | D 8 | 5914 | E 4 | 7070 | B 6 | 7472 | F17 |
| 1040 | B 3 | 1990 | D21 | 2015 | F 3 | 2104 | J14 | 2115 | J20 | 2261 | B12 | 2275 | E12 | 2410 | G18 | 3003 | E 1 | 3100 | H20 | 3113 | J19 | 3259 | A 8 | 3268 | B11 | 3275 | E13 | 3407 | F19 | 3426 | D18 | 3441 | D17 | 3470 | F17 | 5108 | I 15 | 5995 | J21 | 7101 | I 14 | 9259 | B 6 |
| 1103 | J13 | 2002 | B 2 | 2034 | D 3 | 2105 | K14 | 2118 | J18 | 2263 | B 9 | 2276 | E12 | 2430 | E18 | 3004 | E 2 | 3101 | H18 | 3114 | K19 | 3260 | B 7 | 3269 | B11 | 3280 | E10 | 3409 | G18 | 3427 | D19 | 3446 | B18 | 3471 | G17 | 5259 | B 9 | 6010 | F 3 | 7106 | K13 | 9260 | B 7 |
| 1261 | B12 | 2003 | E 1 | 2036 | B 4 | 2107 | H15 | 2122 | K18 | 2268 | B11 | 2278 | E 9 | 2450 | C18 | 3006 | E 2 | 3102 | I 20 | 3115 | J20 | 3261 | B 8 | 3270 | A12 | 3282 | F11 | 3410 | F18 | 3429 | E18 | 3447 | B19 | 3472 | F17 | 5261 | C 8 | 6410 | F19 | 7261 | C15 | | |
| 1262 | B 8 | 2004 | E 1 | 2037 | B 5 | 2111 | J19 | 2123 | K17 | 2269 | B11 | 2279 | C 9 | 2475 | F20 | 3009 | E 3 | 3103 | I 13 | 3121 | K16 | 3262 | B 8 | 3271 | B14 | 3400 | E17 | 3411 | F19 | 3430 | D18 | 3449 | C18 | 3473 | G19 | 5270 | B13 | 6430 | D19 | 7406 | F18 | | |
| 1270 | A13 | 2006 | E 2 | 2101 | I 19 | 2112 | J20 | 2124 | J16 | 2270 | A13 | 2282 | E10 | 2523 | K16 | 3010 | E 3 | 3104 | I 14 | 3122 | K17 | 3263 | C 9 | 3272 | A14 | 3401 | D17 | 3412 | G19 | 3431 | D19 | 3450 | B18 | 3474 | E20 | 5271 | B14 | 6450 | B19 | 7426 | D18 | | |
| 1310 | K 8 | 2007 | E 2 | 2102 | I 19 | 2113 | I 20 | 2259 | B 8 | 2272 | B15 | 2284 | E11 | 2524 | J16 | 3036 | B 5 | 3107 | K13 | 3123 | L16 | 3265 | C 9 | 3273 | A15 | 3402 | E17 | 3420 | D17 | 3432 | E19 | 3451 | B19 | 3475 | E20 | 5473 | F19 | 6490 | E 8 | 7446 | B18 | | |



**REPAIR METHOD POWER SUPPLY (SOPS).**

**Warning**

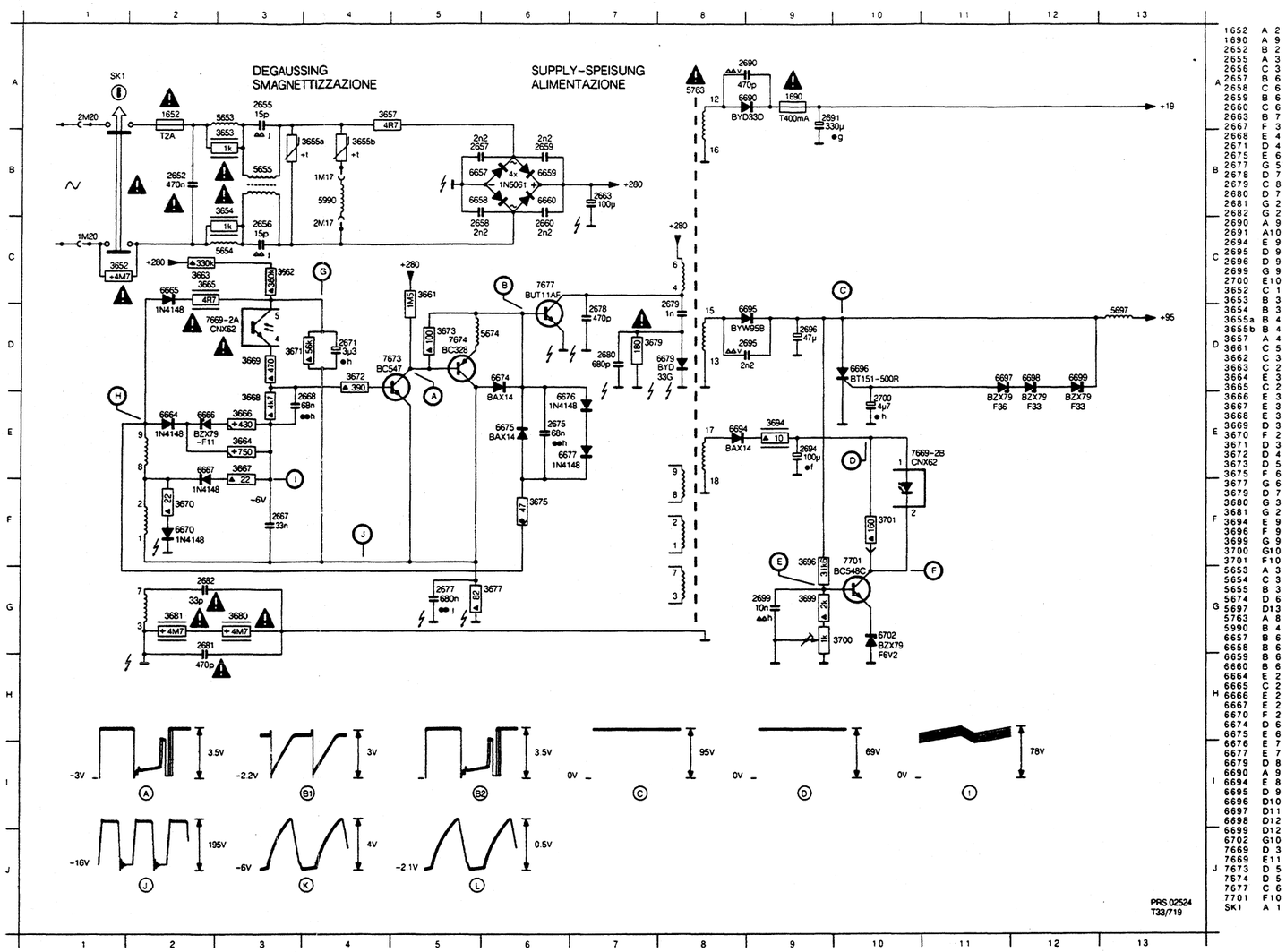
If during the raising of the input voltage the voltage at pin Ⓒ becomes greater than +95V, check the load and its connections.

**Remark 1**

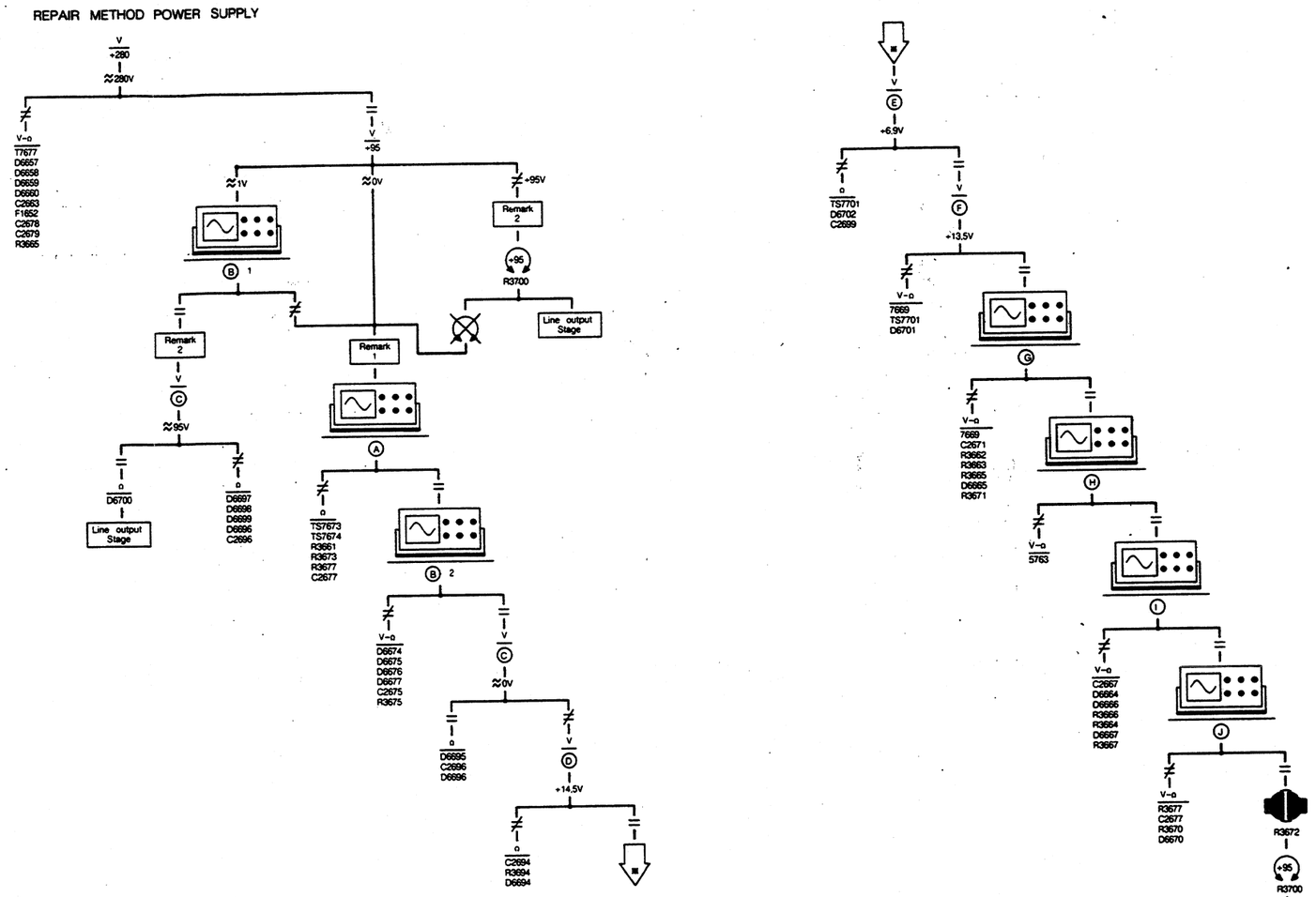
Disconnect resistor 3672 and coil 5697. Connect a 220 V/100W lamp between point Ⓒ and ⊥ . Using a variable transformer, adjust the input voltage for about 85V and check the voltage at point Ⓒ by means of a voltmeter.

**Remark 2**

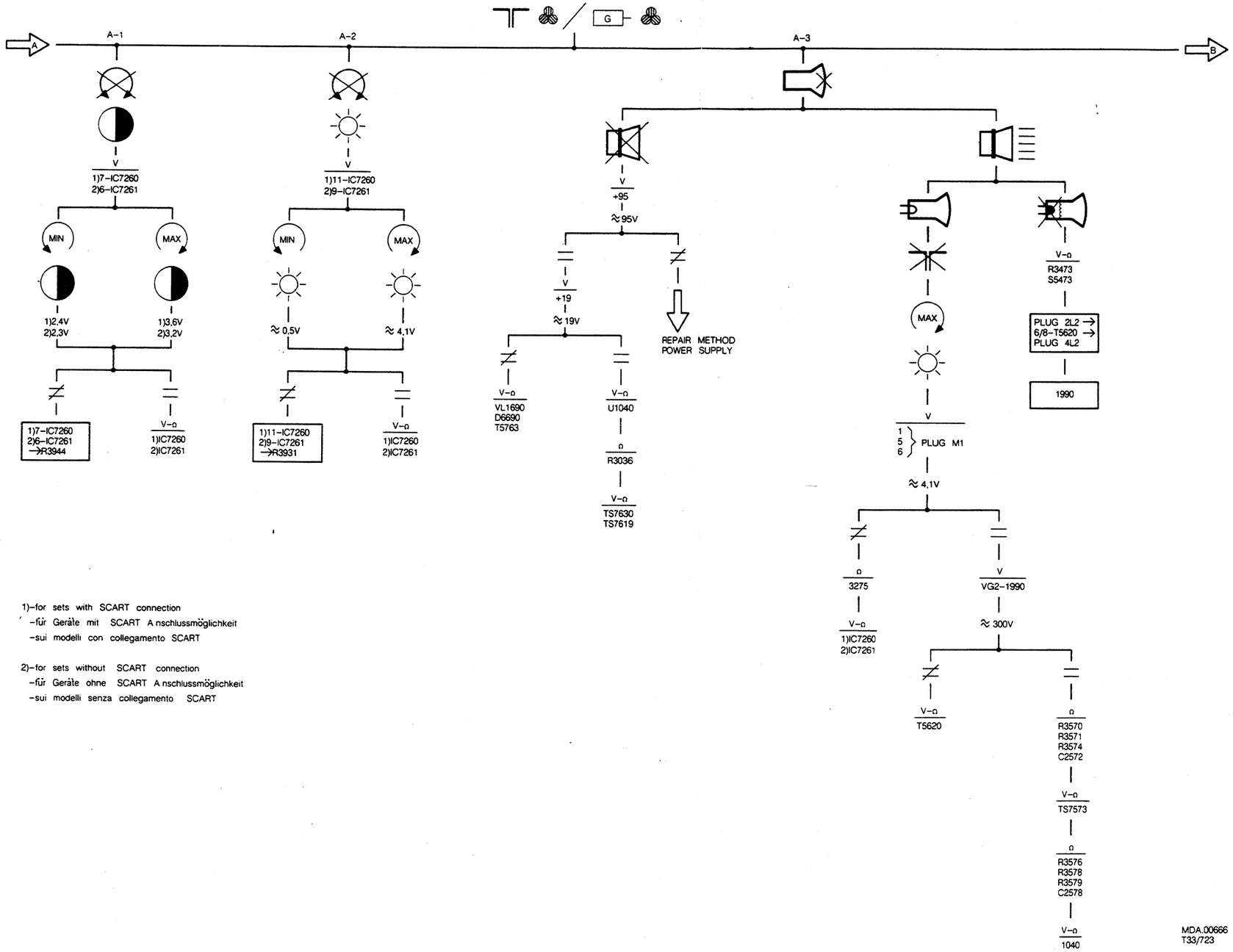
Disconnect coil 5697 and connect a 220V/100W lamp between pin Ⓒ and ⊥ . Using a variable transformer, adjust the input voltage for 220V and measure simultaneously the voltage at point Ⓒ.



REPAIR METHOD POWER SUPPLY



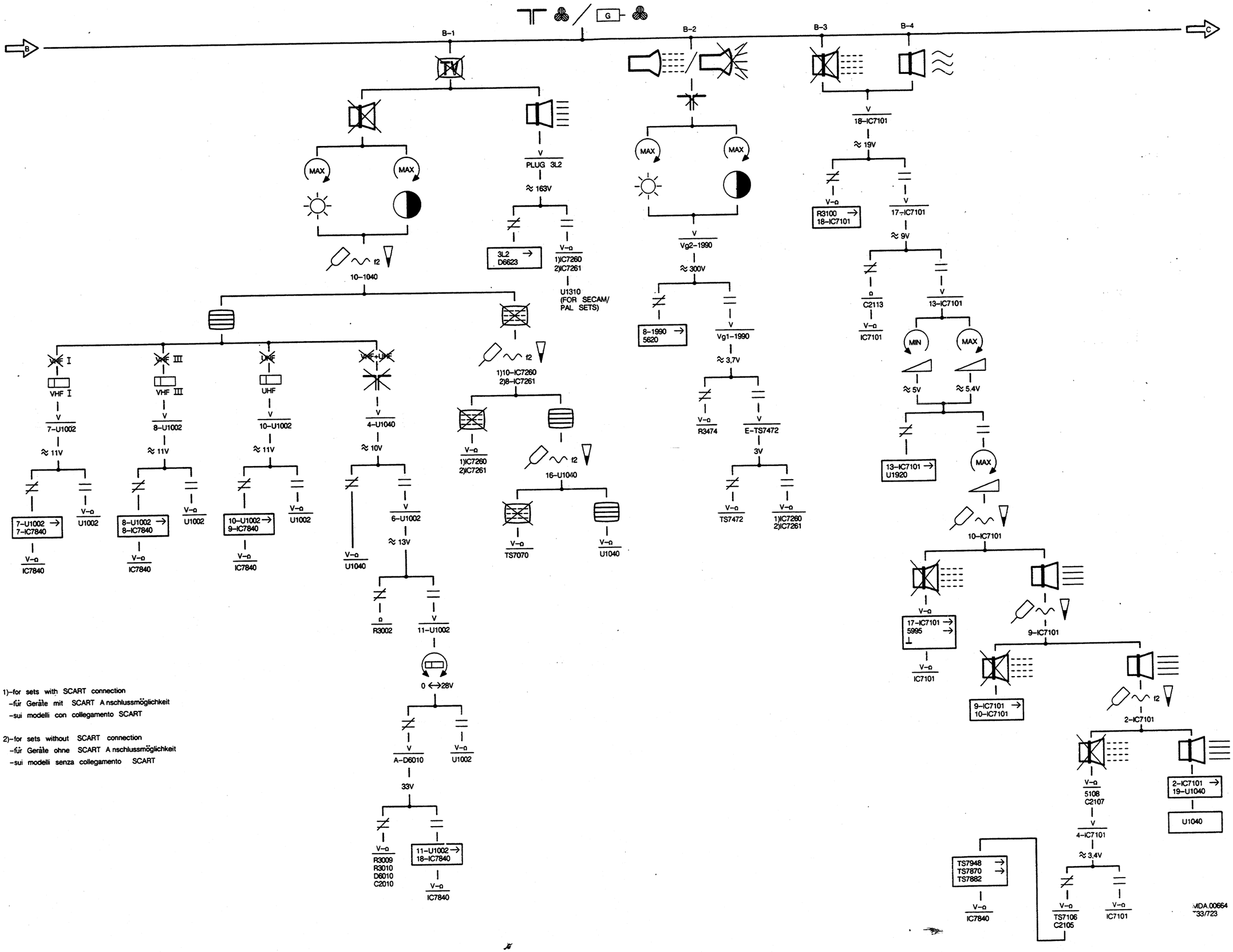

PRS.02480
T28/719




MDA.00666
T33/723

1)-for sets with SCART connection
-für Geräte mit SCART Anschlussmöglichkeit
-sui modelli con collegamento SCART

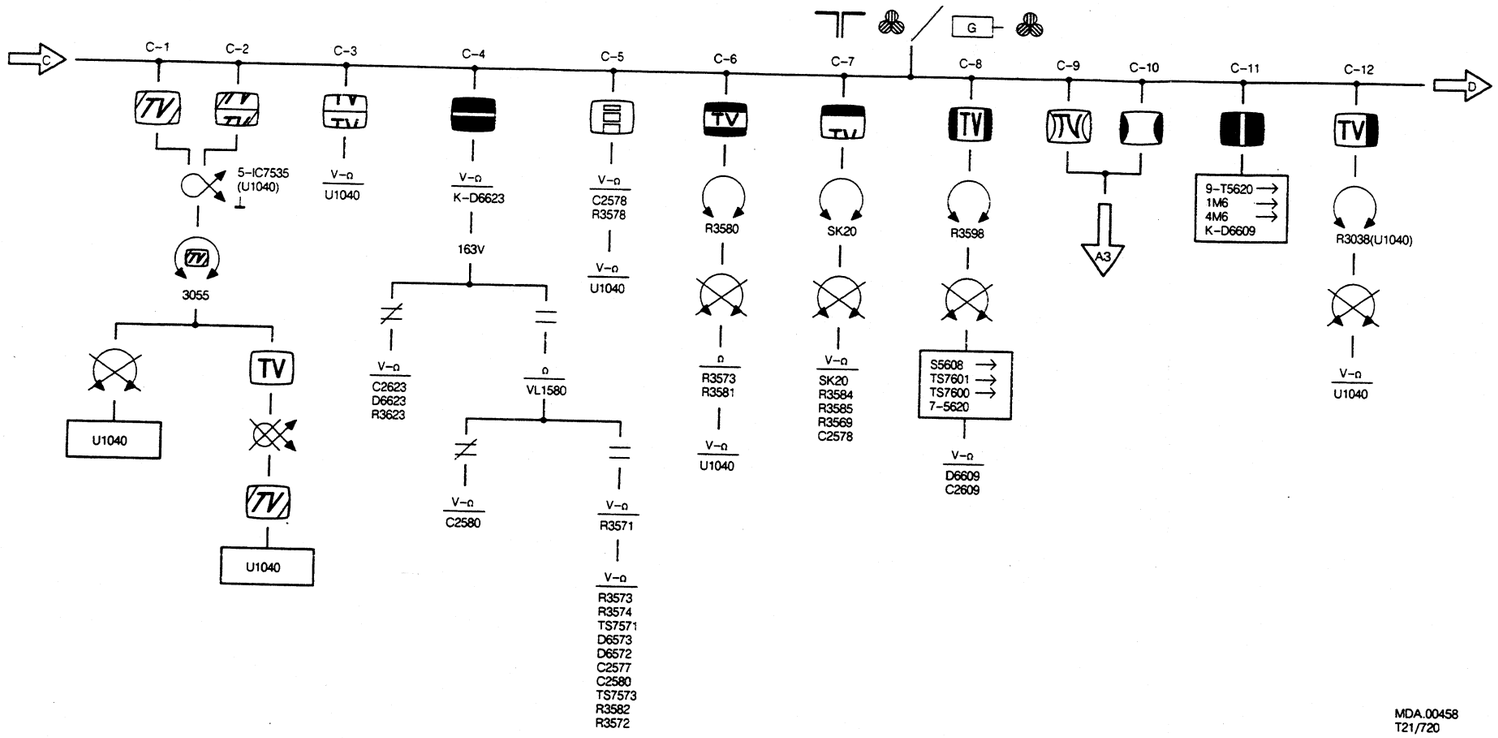
2)-for sets without SCART connection
-für Geräte ohne SCART Anschlussmöglichkeit
-sui modelli senza collegamento SCART



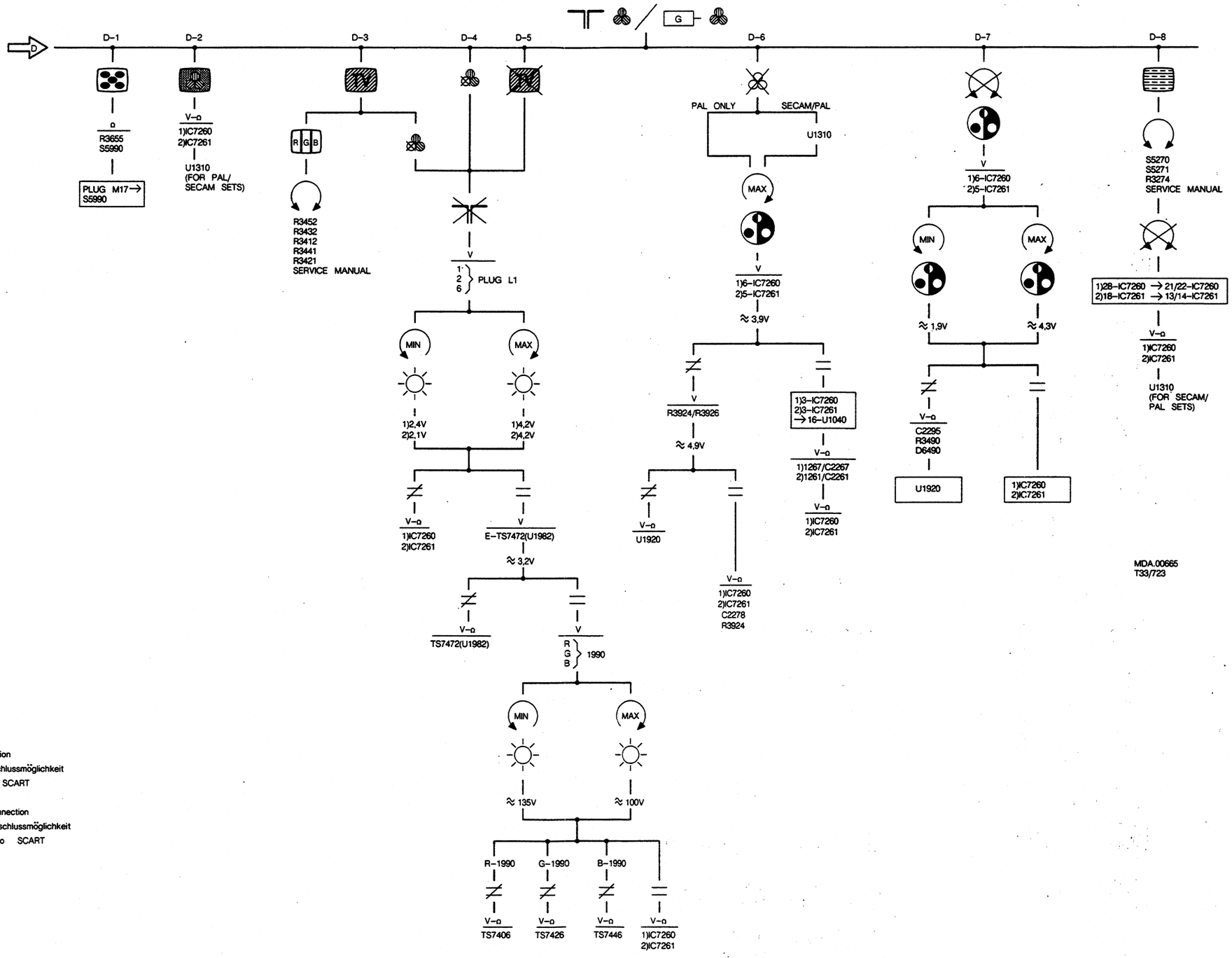

1)-for sets with SCART connection
-für Geräte mit SCART Anschlussmöglichkeit
-sui modelli con collegamento SCART

2)-for sets without SCART connection
-für Geräte ohne SCART Anschlussmöglichkeit
-sui modelli senza collegamento SCART

MDA.00664
33/723




MDA.00458
T21/720




MDA.00665
T33/723

1)–for sets with SCART connection
–für Geräte mit SCART Anschlussmöglichkeit
–sui modelli con collegamento SCART

2)–for sets without SCART connection
–für Geräte ohne SCART Anschlussmöglichkeit
–sui modelli senza collegamento SCART

## SYMBOLS FOR FAULT-FINDING TREES

| | | | | | |
|---|---|---|---|---|---|
| | Supply aerial signal (colour) | | Normal sound | | Line frame (Venetian blinds) |
| | Remove aerial signal | | No or weak sound | | Heavy horizontal bars |
| G | Connect generator colour signal | | No sound | TV | Unstable TV picture |
| V | Carry out voltage measurements | | Sound distorted | ~f2 | Inject with frequency 2 half volume |
| Ω | Carry out resistance (Ohmic) measurements | TV | Connect black / white picture | | ... doesn't work |
| V-Ω ... | Check ... | | No or weak picture | ... | Tune in ... Band |
| = | Correct | | Uniformly discoloured frame with no or weak picture | | Colours |
| ≠ | Incorrect | TV | Picture discoloured uniformly | | One or two colours weak or not present |
| → | Check circuit between .... and .... | TV | Vertical amplitude too small or too large | | Weak colours |
| MAX ... | Set ... to maximum | TV | Horizontal amplitude too small or too large | | No colours |
| MIN ... | Set ... to minimum | | No vertical deflection | SK1 | Switch the set on |
| | Remove unit | TV | No vertical synchronisation | TV | Correct television colour picture |
| U | Insert unit | TV | No horizontal synchronisation | | Desolder... |
| A B | Connect the points A and B | TV | Horizontal centring incorrect | | Resolder... |
| A B | Remove connection between points A and B | TV | Vertical centring incorrect | ≈ ... | is approximately equal to ... |
| | Adjustment (general) | | Vertical linearity incorrect | = ... | Is equal to ... |
| | Adjustment yields no result | TV | The left and right vertical lines are curved | ≠ ... | Is not equal to... |
| | Filament of picture tube glows | | No horizontal deflection | | No or weak horizontal bars |
| | Filament of picture tube does not glow | TV | No synchronisation | | Vertical lines are curved no TV picture no synchronisation |
| | Too much light | | Colour blurrs in black / white picture | | Measure the signal/oscillogram |
| | Insufficient light | | Strong colour noise in black / white picture | Freq ... Hz | Measure frequency |
| | No light | R B G | Correct sequence of colours | | |